1206 Miniterm PRO

User's Manual

Part Number: 0008-04830

COMPUTER DEVICES INC.

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COMPUTER DEVICES, INC.
25 North Avenue
Burlington, MA 01803
Telephone 617-273-1550
Telex 94-9398

1206 MINITERM PRO
USER"S MANUAL
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CONTENTS

SECTION 1 PORTABLE PROCESSING WITH THE CDI 1206 MINITERM

Page 6 THREE WAYS TO USE YOUR MINITERM
8 OPTIONS FOR STILL GREATER CAPABILITIES
10 APPLICATIONS OF THE MINITERM 1206
11 BASIC PROCEDURE FOR UNPACKING, CONNECTING, & USING THE MINITERM
12 OPENING AND CLOSING THE MINITERM CASE
12 Removing the Lid from the Miniterm
13 Replacing the Lid on the Miniterm
13 CONNECTING POWER TO THE MINITERM
14 THE KEYBOARD
14 THE PRINTER
15 Changing the Paper in the Printer
16 Cleaning the Printhead
17 THE TAPE DRIVE
17 Precautions in Using Minicassettes
18 Inserting and Removing a Minicassette
18 Write-Protecting a Tape
19 Cleaning the Tape Head

SECTION 2 USING THE EDITOR

Page 20 INTRODUCTION
20 The Functions of the Editor
21 The Organization of the Memory
22 Using the Editor
23 PUTTING THE EDITOR IN CONTROL OF THE MINITERM
24 ENTERING TEXT INTO THE EDITOR WORKSPACE
24 The "Insert" Command
24 Correcting Typing Errors
25 Correcting Other Problems
25 Setting and Using Tabs
26 REVISING TEXT IN THE EDITOR WORKSPACE
26 Positioning the Pointer
28 Inserting Additional Text
29 Deleting ("Killing") Unwanted Text
30 Changing a Single String of Text
31 Changing All Occurrences of a String of Text
31 Changing a Single String of Text by Line Number
32 PRINTING OUT THE TEXT IN THE WORKSPACE
32 Printing Standard Text
33 Printing Text with Line Numbers
34 USING MEMORY FILES
34 Writing Text into a Memory File
35 Reading Text from a Memory File
36 Purging (Deleting) a Memory File
36 Printing a Directory of Memory Files

continued...

(Section 2, continued)

Page 38 USING TAPE FILES
38 Positioning the Tape
39 Writing the Text into a Tape File
39 Writing the Tabs into a "Control" File
40 Reading Text from a Tape File
41 Reading the Tabs from a "Control" File
41 Printing a Directory of Tape Files
42 LEAVING THE EDITOR FOR ANOTHER OPERATIONAL MODE
42 Transferring Control to the ASR/KSR Terminal Mode
43 Transferring Control to the BASIC Interpreter
43 Transferring Control to the DOS Executive
44 REFERENCE LIST OF EDITOR COMMANDS
47 REFERENCE LIST OF ERROR CODES

SECTION 3 RUNNING A BASIC PROGRAM
Page 48 INTRODUCTION
49 PUTTING THE BASIC INTERPRETER IN CONTROL OF THE MINITERM
51 LOADING THE BASIC PROGRAM FROM TAPE
52 RUNNING A BASIC PROGRAM
53 LEAVING THE BASIC INTERPRETER FOR ANOTHER OPERATIONAL MODE
53 Transferring Control to the Editor
53 Transferring Control to the DOS Executive

SECTION 4 USING THE MINITERM AS A KSR/ASR TERMINAL
Page 54 INTRODUCTION
54 The Miniterm as a KSR/ASR Terminal
55 Full and Half Duplex Line Modes
56 CONNECTING THE MINITERM TO THE HOST COMPUTER
56 Using the Acoustic Coupler
58 Using the RS232C Interface
60 USING THE MINITERM AS A KSR TERMINAL
61 USING THE MINITERM AS AN ASR TERMINAL
62 Transmitting Data from Memory
64 Receiving Data into Memory
66 Transmitting Data from Tape
68 Receiving Data onto Tape
70 Transmitting Tape Data into Memory
72 Transmitting Memory Data onto Tape
75 LEAVING THE KSR/ASR MODE FOR ANOTHER OPERATIONAL MODE

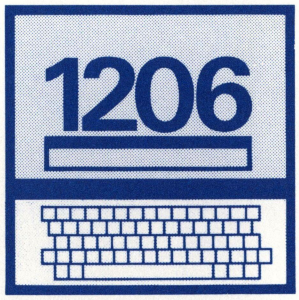
SECTION 5 USING THE OPTIONAL 80/132-COLUMN PRINTER/PLOTTER
Page 76 INTRODUCTION
78 USING THE DUAL-PITCH PRINTER
78 Setting the Pitch
78 Automatic Uncover (132-Column Only)
79 Underscoring
79 Plotting

continued...

SECTION 6 USING THE OPTIONAL BAR-CODE READER
Page 80 INTRODUCTION
81 CONNECTING THE BAR-CODE READER
82 PROGRAMMING THE BAR-CODE READER
82 USING THE BAR-CODE READER
83 Possible Problems

SECTION 7 USING THE OPTIONAL DISK OPERATING SYSTEM (DOS)
Page 84 INTRODUCTION
86 INSTALLING THE DISK-DRIVES
86 Installing a Single Disk-drive
87 Installing Multiple Disk-drives
87 Setting-up the Disk-drives
88 USING THE DISKETTES
88 Precautions in Using Diskettes
89 Unloading a Diskette from the Drive
89 Loading a Diskette into the Drive
90 THE DOS EXECUTIVE: GENERAL OPERATION
90 Resident and Transient Commands
91 FILE MANAGEMENT USING THE DOS EXECUTIVE
92 Initializing a Diskette to Receive Files
93 Listing the Files on a Disk
94 Backing-up a Diskette
94 Controlling the Security of a File
95 Deleting a File from a Diskette
95 Renaming a File
96 Renaming a Diskette
96 Media Conversion Operations
99 OTHER OPERATIONS USING THE DOS EXECUTIVE
99 Leaving the Executive for Another Mode
100 Assigning Devices (I/O Channels)
100 Checking the Status of the Devices
101 Programming s Series of Commands
101 Loading a Program
102 Automatically Starting a Program
102 Jumping into a Program

SECTION 8 BEFORE YOU CALL FOR SERVICE ...
Page 104 INTRODUCTION
105 YOUR PROBLEM ... POSSIBLE CORRECTIVE PROCEDURES
105 Overall Operational Problems
106 Printer Problems
107 Tape Problems
108 Bar-code Reader Problems
109 80/132-column Printer/Plotter Problems
110 Disk Operating System Problems



SECTION 1

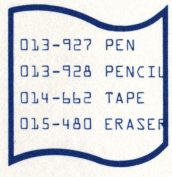
PORTABLE PROCESSING WITH THE CDI 1206 MINITERM

THREE WAYS TO USE YOUR MINITERM

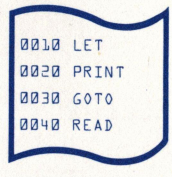
The CDI Miniterm PRO model 1206 is a complete computer system in a portable package. As Figure 1-1 shows, the Miniterm consists of the same elements as a full-size computer: it includes a terminal (keyboard and printer) and a minicassette tape drive; other capabilities are also available as options.

The Miniterm also includes built-in software that lets you use it in three ways:

As an Editor, the Miniterm can be used to create and to maintain files of data. The built-in Editor program can halp you do your job by automating your parts-lists, inventories, and so on. Using the Miniterm and its Editor program is described in Section 2 of this book.



As a BASIC Interpreter, the Miniterm can be used to run custom programs produced by your company to meet its own special needs. A special program may help you process sales orders, audit accounting books, give a sales demonstration, and so on. Using the Miniterm and its BASIC Interpreter is described in Section 3 of this book.

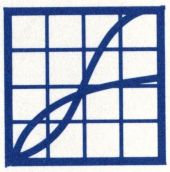


As a remote terminal, the Miniterm can be used as part of a larger "host" computer - either via a direct cable connection, or via a telephone using a built-in acoustic coupler. The Miniterm can be used as a simple "dumb" (KSR) terminal, using only the keyboard and the printer; or it can be used as an "intelligent" (ASR) terminal. Using the Miniterm as a KSR/ASR terminal is described in Section 4 of this book.

Figure 1-1. The Miniterm 1206 consists of the same elements as a full-size computer. It includes a terminal (keyboard and printer) and a minicassette tape drive. Other capabilities are also available as options.

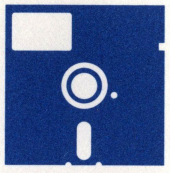
OPTIONS FOR STILL GREATER CAPABILITIES

Three important options provide your Miniterm with extended capabilities for special applications:



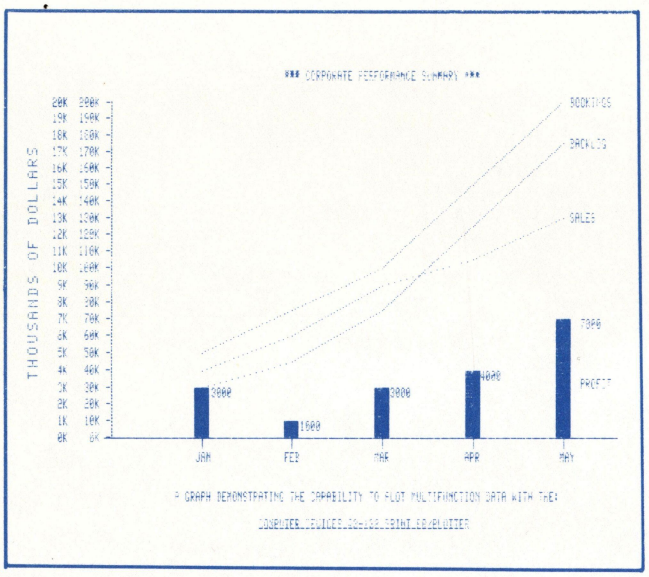
The 80/132-column printer/plotter can be equipped on any Miniterm 1206 in place of the standard 80-column printer. In its 132-column printer mode, the printer/plotter can pack more printed data into a page. And in its plotter mode, the printer/plotter can plot results directly in graphical form. Using the optional printer/plotter is described in Section 5 of this book.

A Code 39 (TM*) Bar-Code Reader can be provided, making the Miniterm a model 1206/BCR. The bar-code reader is used to acquire data directly from inventory-control labels. The ability to read a label directly using a wand speeds up data entry, and reduces the risk of error. Using the optional Bar-Code Reader is described in Section 6 of this book.



A Disk Operating System can be equipped, making the Miniterm a model 1206/DOS. The DOS is extremely useful when computing power is more important than portability: it includes up to four diskette drives, providing a total capacity for almost 1½ million characters. A DOS Executive program provides powerful file management capabilities. Using the optional Disk Operating System is described in Section 7 of this book.

*"Code 39" is a registered trademark of Interface Mechanisms, Inc.


*** CORPORATE PERFORMANCE SUMMARY ***
THOUSANDS OF DOLLARS
20K 200K
19K 190K
18K 180K
17K 170K
16K 160K
15K 150K
14K 140K
13K 130K
12K 120K
11K 110K
10K 100K
9K 90K
8K 80K
7K 70K
6K 60K
5K 50K
4K 40K
3K 30K
2K 20K
1K 10K
0K 0K
BOOKINGS
BACKLOG
SALES
PROFIT
3000
1600
3000
4000
7000
JAN
FEB
MAR
APR
MAY
A GRAPH DEMONSTRATING THE CAPABILITY TO PLOT MULTIFUNCTION DATA WITH THE

APPLICATIONS OF THE MINITERM 1206

The Miniterm 1206 can be used in a wide variety of ways, including:

- *field auditing:* Field staff who conduct extensive audits in the field - for example, accountants and home energy consultants - can greatly streamline their work by taking the computing power of a Miniterm with them. The Miniterm can be programmed to make their particular application simple.

- *remote order entry:* Traveling sales representatives can initially prepare their sales orders in the field, directly on a Miniterm. Periodically, the Miniterm can send the pre-processed orders to the main computer at the factory. This saves paperwork and time, yet also relieves the load on the staff and computer at the factory.

- *inventory/stock control:* By computerizing the control of stockroom inventories, a manufacturer can keep much closer track of the flow of products and materials. By knowing the exact status of inventory, a manufacturer can order new supplies in time, and can avoid building surplus inventory.

- *sales demonstrations:* A Miniterm can be a powerful aid in technical demonstrations for sales purposes. A computer can make a presentation more effective; and a portable computer is much more convenient than just a portable terminal that must be connected to a remote host computer for the demonstration.

BASIC PROCEDURE FOR UNPACKING, CONNECTING, AND USING THE MINITERM

To unpack and install your new Miniterm for the first time, see the instructions on the following pages:

12 Opening the Miniterm Case

13 Connecting Power to the Miniterm

15 Changing the Paper in the Printer

18 Inserting and Removing a Minicassette*

Then to familiarize yourself with the Miniterm, we suggest you begin by using the Editor:

20 (Section 2) Using the Editor

**You may not need to use a tape right away, in which case you can omit this step.*

OPENING AND CLOSING THE MINITERM CASE

The Miniterm is equipped with a fitted case that simply clamps on much like a briefcase lid. However, the Miniterm lid is completely removable.

The lid also doubles as a storage container for the power cord, for a spare roll of printer paper, for several minicassettes, and even for this manual.

REMOVING THE LID FROM THE MINITERM

Remove the cover from the Miniterm as follows.

1 Press the top of each catch downwards and outwards.

2 When the catches have moved downwards as far as they will go, swing the bottom of each catch forward until it clears the case.

3 Raise the lid of the Miniterm at the front: it is hinged along the bottom edge of the back.

4 When the lid is standing vertically, you can lift it straight up: the hinges separate, and the lid comes entirely free of the Miniterm. Set the lid aside upside-down, so you can access its interior.

Within the lid is a storage compartment formed by a hinged, padded cover. A hole in this cover functions as a handle: to open the cover, insert a finger into this hole and pull. When you receive your Miniterm, you will observe that there is a spare roll of printer paper resting in a cradle in this compartment; and next to it is the power cord. There may also be one or more minicassettes in a well at one end of the compartment.

REPLACING THE LID ON THE MINITERM

Replace the lid on the Miniterm as follows.

1 Prepare the Miniterm to be closed up:
- if there is paper projecting from the printer, tear it off;
- if a telephone is plugged into the acoustic coupler, remove it and fold up the coupler;
- if there is a minicassette in the tape-drive, rewind it and remove it;
- turn off the power, and disconnect the power cord at both ends.

2 Pack the power cord into the lid of the Miniterm, along with any loose minicassettes, and close the cover of the storage compartment.

3 Holding the lid vertically by its handle, engage the hinge-tabs on the lid with the mating hinge-sockets on the back of the Miniterm.

4 Swing the lid down over the Miniterm, and clamp the catches at the front. To clamp the catches, hook the free end of each catch under the front edge of the Miniterm case, then press the top of each catch upward and inward.

CONNECTING POWER TO THE MINITERM

The Miniterm has a detachable power cord that is stored in the hinged compartment within the lid. This power cord has a standard 3-pin, 110-V plug on one end, and a female connector on the other end.

To connect this cord, first make sure that the Power switch at the left end of the switch panel on the Miniterm is in the Off (down) position.

Plug the female connector of the power cord into the mating connector on the rear of the Miniterm. Note that these connectors are polarized: you must orient them correctly before they will mate.

Plug the male connector of the power cord into a standard 110-V outlet. The Miniterm is now ready for use.

THE KEYBOARD

The Miniterm 1206 is equipped with a keyboard that is essentially a typewriter keyboard with a number of additional keys. You will soon learn your way around this keyboard, especially if you remember that the keys fall into three major groups:

- The keys of an ordinary typewriter; these are laid out in the usual way with four rows of alphanumeric and punctuation keys plus a spacebar.
- The control keys of a standard teletypewriter, such as ESC (escape) and CTRL (control), for when the Miniterm is used as a terminal; these are arranged at the sides of the typewriter keyboard.
- Some control keys that are unique to the Miniterm, such as PAPER FEED and FWD (tape forward); these are arranged on either side of the spacebar.

The exact uses of the various special keys are explained in this book when you need to use them.

THE PRINTER

The Miniterm is normally equipped with an 80-column thermal printer that prints a standard set of alphabetic, numeric, and punctuation symbols. The letters of the alphabet are always printed in capitals ("upper case"); if you press the SHIFT key, you get the same set of letters, but they are printed larger.

The printer is very easy to take care of: you only have to change the paper when it runs out, and occasionally perform a simple procedure for cleaning the printhead.

Figure 1-5. To open the hinged top cover of the Miniterm, hook a fingertip into a corner at either side and lift.

CHANGING THE PAPER IN THE PRINTER

The printer makes use of a roll of thermal paper, which you can order from CDI as thermal paper type B. When the printer runs out of paper, the printer stops automatically, and an Error indicator on the switch panel flashes. Replace the paper as described below. (To load the paper for the first time, omit step 2.)

1 Open the top cover of the Miniterm. It is hinged across the rear, and you open it by hooking a fingertip into a corner at either end of the printer (see Figure 1-5) and lifting.

2 Remove the empty paper-roller from the well by pressing to the left against a spring; when the right end of the roller clears its mounting pin, lift the roller up and away from the left mounting pin. Discard the empty roller.

Note: It is good practice to clean the printhead at this point each time you load a new roll of paper. However, if you are in the middle of a printout when you need to change paper, that is not a good time to clean the printhead; you might want to make a note to clean it after the printout has finished. The procedure for cleaning the printhead is described on page 16.

3 Unwrap the new roll of paper, and cut a clean, straight edge across its end. Lay this roll immediately in front of the raised lid of the Miniterm, with the paper feeding from underneath as shown in the illustration inside the lid of the Miniterm.

4 Thread the free end of the paper under the black rod that runs across the rear of the well; the paper should feed from back to front of the Miniterm as shown in the illustration inside the lid of the Miniterm.

5 Run the end of the paper forward across the floor of the well, and insert it under the metal flange at the front of the well; the paper also runs under a microswitch and two rubber rollers. The paper goes under the flange about one inch, then stops against the rollers.

6 Rotate either of the rollers (they are joined together) so as to feed the paper into the printhead. Keep rotating until the paper protrudes from the top of the Miniterm.

7 Fit the roll of paper into the mounting pins by pressing the left side against its spring-loaded pin until the right side will drop down onto its pin, as shown in the illustration inside the lid of the Miniterm. Ensure that the roll is engaged on the pins on both sides, and gently roll any slack paper onto the roll.

8 Check that the paper coming off the roll does pass under the black rod at the back of the paper-well. As you close the lid on the top of the Miniterm, make sure the paper coming out of the printer is not trapped underneath it.

9 If the printer stopped in the middle of a printout, you can re-start it by pressing the spacebar.

CLEANING THE PRINTHEAD

The printer uses a thermal process in conjunction with special thermal paper. The process slowly builds up a residue on the printhead, and it is good practice to clean the printhead each time you load a new roll of paper. However, if you are in the middle of a printout when you need to change paper, that is not a good time to clean the printhead; you might want to make a note to clean it after the printout has finished.

To clean the printhead, use the following procedure.

1 Remove the paper-roll from the printer. (If there is still paper in the printer, you can easily pull it out backwards.)

2 Load a sheet of ordinary bond typing paper into the printer as though it is the end of a roll of paper.

3 Print about ten lines of varied characters: note that no printing will appear on the paper, since it is not thermal paper. However, this process cleans the residue from the printhead.

4 Remove the bond paper and discard it. Load the regular printer paper in the usual way.

THE TAPE DRIVE

The Miniterm is equipped with a tape-drive that accepts standard minicassettes. The tape drive is under a small flap conveniently situated on the top of the Miniterm (see Figure 1-6).

Mostly, using the tape-drive involves inserting and removing minicassettes from the drive. Occasionally you will want to clean the tape heads. And sometimes you may wish to write-protect a tape containing valuable data that you do not wish to lose.

Figure 1-6. The Miniterm is equipped with a tape-drive that accepts standard minicassettes. The tape drive is under a small flap conveniently situated on the top of the Miniterm. To open the drive, press the domed button behind it.

PRECAUTIONS IN USING MINICASSETTES

To ensure that you do not damage the data on a minicassette, and to protect the tape-drive itself, always observe the following rules:

- *Do* rewind the tape fully before you turn off the power to the Miniterm. To rewind the tape, press the Tape Rwd/Fwd switch up to the Rwd position; the tape has rewound with the Rdy indicator begins to flash.
- *Do* rewind the tape fully before you remove the minicassette from the tape-drive.
- *Do not* leave the tape-drive door open: dust or dirt may damage the tape-drive mechanism.
- *Do not* transport the Miniterm with a minicassette in the tape-drive.

Figure 1-7. When you insert a minicassette the right way around, you cannot read the label because it is the wrong way around.

INSERTING AND REMOVING A MINICASSETTE

To insert a minicassette:

1 Open the tape-drive by pressing the domed button immediately behind it (see Figure 1-6).

2 Identify which side of the tape you wish to use, A or B, as indicated by the labels on the minicassette. The side you want to use should face upwards.

3 Insert the minicassette into the grooves in the door of the tape-drive; the side where the tape is exposed should go in first. (This means that you will not be able to read the label, because it is upside down, as shown in Figure 1-7.)

4 Close the door by pressing it down gently until it latches.

The tape is now ready to use.

To remove a minicassette:

1 Open the tape-drive by pressing the domed button immediately behind it (see Figure 1-6).

2 Remove the minicassette by sliding your thumb under it and your fingers over the top of the door. Squeeze gently, and pull out the minicassette.

WRITE-PROTECTING A TAPE

When you have recorded valuable information on a tape, you may wish to make sure that the tape does not get re-recorded accidentally. You can do this by "write-protecting" the tape. You can write-protect each side of the tape separately.

The tape is write-protected by punching-out two very small plastic tabs, one for each side of the tape. You can find these tabs in the very center of the back edge of the minicassette, that is, the edge opposite the tape access. Figure 1-8 shows these tabs, and shows how to remove them. Note that the write-protect tab for side A is on the side B side of the minicassette, and conversely the write-protect tab for side B is on the side A side of the minicassette.

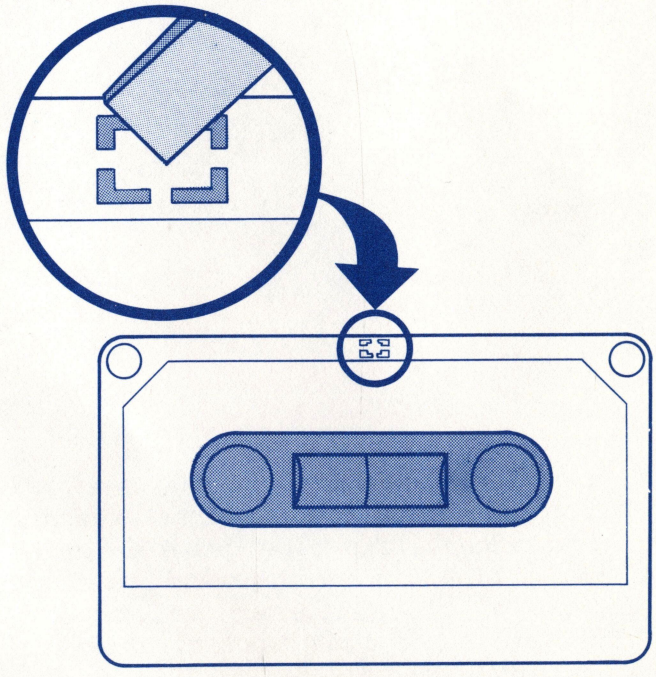


Figure 1-8. The location of the write-protect tabs, and how to remove them.

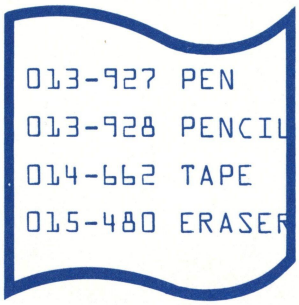
CLEANING THE TAPE HEAD

Tape heads tend to accumulate a small amount of oxide from the tape, and - because it can cause errors in reading and writing tapes - you may have to clean it off from time to time. Usually you can see this oxide when it has built up to an excessive level.

To clean the tape head, use a cotton-tipped swab dipped in isopropyl (rubbing) alcohol. Rub the tip of the swab over the exposed area of the tape head until the oxide disappears.

Do not use a freon-based cleaner on the tape-drive.

Do not attempt to oil or grease any of the tape-drive mechanisms.



USING THE EDITOR

INTRODUCTION

THE FUNCTIONS OF THE EDITOR

The Editor allows you to create a body of text in a workspace within the memory of the 1206 Miniterm. After you have initially created this body of text, you can:

- revise the text in various ways;
- print out the text in the workspace; and
- store this text as a "file" in the memory, on a tape cassette, or (if your system is equipped with a disk operating system) on a floppy diskette.

Once a file exists in storage - in a memory file, a tape file, or a disk file - you can load it back into the memory workspace and edit it again at any time. The Editor is therefore a useful tool both in creating text files and in maintaining (updating) them.

This section of the manual explains how to create text files, how to maintain them, how to store them, and how to retrieve them.

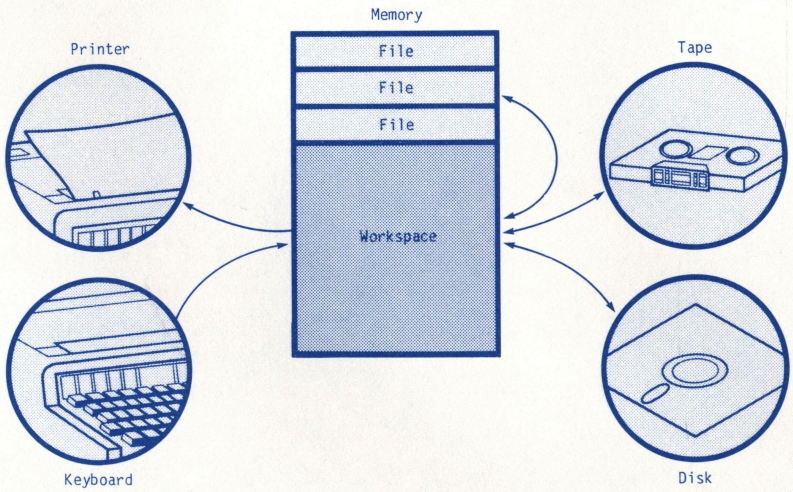


Figure 2-1. The Editor allows you to type text into a "workspace" in the memory. You can then store this text in the form of a "file" elsewhere in memory, on a minicassette tape, or on a diskette.

THE ORGANIZATION OF THE MEMORY

You will be able to get the best use out of your Miniterm if you understand how its memory is organized. This organization is illustrated in Figure 2-2.

The memory in the Miniterm has a total capacity of about 32,000 typed characters. This capacity is commonly referred to as "32K" of memory - where "K" means 1,000 characters. Of this 32K, some is used by the Miniterm itself for its own software "overhead". The remainder of the memory is available for you to use for your own Editor text and BASIC programs, as follows:

- In a standard 1206 system, the software overhead amounts to about 2K, leaving about 30K for you to use.
- In a 1206 DOS system, the software overhead amounts to about 14K, leaving about 18K for you to use.

The memory space left available for your use with the Editor consists of two parts. Part of the memory space may be used to store files of text - the so-called memory files; there may be up to 16 of these files, and they can be of any size. What is left of the memory space is available for holding text that is being created or manipulated by the Editor. (See Figure 2-3.)

Thus the amount of memory space available for your use depends on two factors: whether or not your system has a DOS; and how much space is taken up by memory files. If there are no memory files currently, you can use the Editor to create a file as big as 30K (18K if your system has a DOS). However, there commonly are other files in memory, and the amount of space available for editing is less than the maximum.

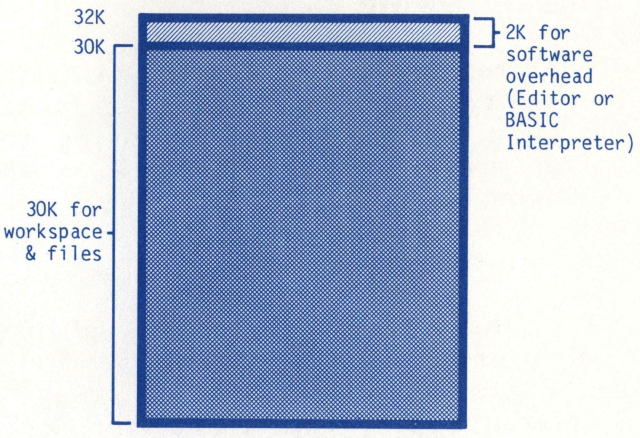


Figure 2-2. The entire memory can store 32,000 ("32K") typed characters. However, 2K of this space is used by the Miniterm for its own software, leaving 30K for you to use.

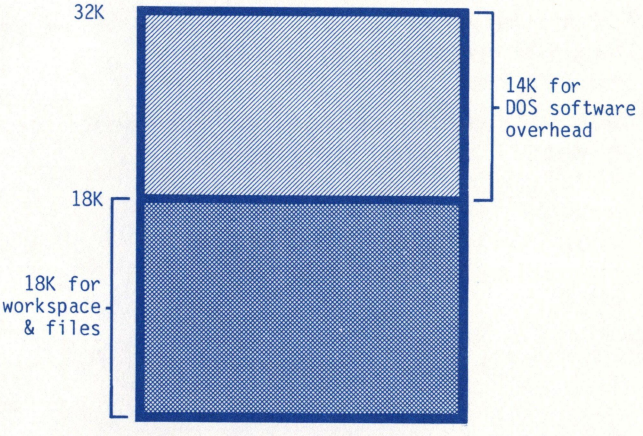


Figure 2-3. In a Miniterm 1206 DOS, the software used by the Disk Operating System uses 14K of the memory, leaving 18K for you to use.

USING THE EDITOR

The Editor is used to create, maintain, print-out, and store files of text. The detailed procedures for using the Editor are described in detail on the following pages. Very briefly, however, the overall procedure for using the Editor is as follows:

1 Put the Editor in control of the Miniterm.

2 Enter the text into the Editor workspace in memory.

3 Revise the text as required.

4 Print out the text. (Actually you can print out the text at any time during step 2 or 3.)

5 Put the text away as a memory file, a tape file, or a disk file.

Each of these operations is described in detail below.

PUTTING THE EDITOR IN CONTROL OF THE MINITERM

You put the Editor in control of the Miniterm by setting the slide switches on the panel immediately above the keyboard. Set these switches as shown below:

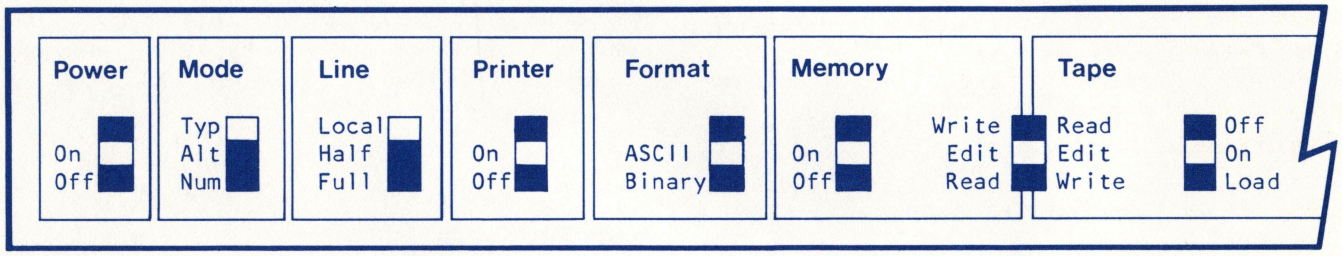


Figure 2-4. To use the Miniterm in the Editor mode, set the switches as shown here.

A few seconds after you turn on the power, the Miniterm types out a diagnostic message such as:

```
VER F6.00 OK
```

Press the START/STOP key at the lower left corner of the keyboard: the Miniterm responds:

```
EDITOR

!
```

The Editor is now in control of the Miniterm. The "!" is a prompt, telling you that the Editor is ready to receive a command. This prompt will appear every time the Miniterm finishes executing one of your commands, telling you that it is now ready to receive a new command.

Note: A red "Rdy" indicator may be lit (or flashing) in the lower right corner of the switch panel above the keyboard. This indicator tells you the status of the tape cassette, but you can ignore it until you are ready to use the tape.

ENTERING TEXT INTO THE EDITOR WORKSPACE

THE "INSERT" COMMAND

Once the Editor is in control of the Miniterm, you can begin to enter text. Normally you can enter text at any point in the Editor workspace by using an "insert" command. When the workspace is empty - as it is initially - you still use an "insert" command, although in this case the Miniterm automatically puts the text at the beginning of the workspace.

The "insert" command is simple:

```
I (RETURN)
```

(In other words, in response to a "!" prompt, you type the letter I, followed by the RETURN key. The spaces that appear in the example above are included just to make it easier for you to read.)

After the "insert" command, everything you type is entered into the workspace as text. You can type any information you wish into the workspace, ending each line by pressing the RETURN key.

To end the text, and to return control of the Miniterm to the keyboard, press the ESC (escape) key. Note that when you press the ESC key, the Miniterm actually prints a "$" symbol. It then executes a carriage-return/linefeed, and prints a "!" to prompt you to enter another command.

A complete "insert" operation for one line of text might look like this on the printer"

```
!I
11-653 Pen, black
$
!
```

CORRECTING TYPING ERRORS

You can correct a typing error both when you are typing in text, and when you are typing a command. Pressing the RUBOUT key deletes the last character you typed; the printer prints it again to confirm the rubbing-out. For example, imagine you are typing the word "pencil", and you accidentally type a "V" instead of a "C":

```
... PENV
```

You can correct this by pressing the RUBOUT key:

```
... PENVV
```

The second "V" confirms the correction, and you can carry on typing:

```
... PENVVCIL ...
```

When you print this line it will appear correctly:

```
... PENCIL ...
```

If you want to delete several characters, simply press the RUBOUT key several times. For example, you might not notice the error described above until you have typed the entire word:

```
... PENVIL
```

You can respond at this point by pressing the RUBOUT key three times to delete the last three characters; the Editor responds by retyping each character as it rubs it out:

```
... PENVILLIV
```

And you then type the letters correctly:

```
... PENVILLIVCIL ...
```

CORRECTING OTHER PROBLEMS

If you enter too much text into the workspace, you can overflow the memory. If this occurs, the Miniterm beeps and prevents you from typing any more text. To recover from this, you must file at least some of the text from the workspace into a memory file, a tape file, or a disk file.

If you start to enter a command, then realize that you have made a mistake, you can abort it by pressing the LINE-FEED key. However, you cannot abort a command once you have pressed the RETURN key: once you initiate the execution of a command by pressing the RETURN key, that command is already in effect.

If you type an illegal command, the Miniterm beeps and types a "?"; it then executes a carriage-return/linefeed, and repeats its normal "!" prompt. In this case the Editor has recovered by itself, and all you need to do now is type a legal command.

In response to more complex problems, the Miniterm may type an error message. Error messages are listed and explained on page 47.

SETTING AND USING TABS

If your text includes columns of information - a common requirement - you may wish to use tabs to ensure that the columns line up. In order to use tabs, you must first specify where the tabs are to be established across the page. Later, in entering the text into the Editor workspace, you can call for the use of the tabs you have set.

To set the tabs, use a "TB" command in response to a "!" prompt. The format of a "TB" command is:

TB (position number) (RETURN)

The position number indicates the position of the tab across the page; the numbers run from 1 (left margin) to 80 (right margin). You can set any number of tabs in this way.

You can clear all the tabs by using a "TX" command:

TX (RETURN)

When you are typing text into the workspace, you actually enter a tab by holding down the CTRL key and typing I. This is called a (CTRL+I) command.

An example of tab use. To set a tab at position 10, you would type:

TB 10 (RETURN)

Then while you were typing in text, you might type:

11-653 (CTRL+I) Pen ...

Later, when you type out this line, it would appear:

11-653 Pen ...

With the word "Pen" beginning at position 10.

REVISING TEXT IN THE EDITOR WORKSPACE

Once you have text in the workspace - either just created or loaded from a memory, tape, or disk file - you can revise it. There are basically three ways to revise the text:

- insert a new line between two existing lines, or at the end of the text.
- delete ("kill") an existing line.
- change an existing string of text into a new string of text. (In this case, a "string" may be more or less than one complete line.)

These methods of revising text are described in detail below. But first you must understand how to get to the line where you wish to make a revision.

POSITIONING THE POINTER

You can operate on any text in the workspace, but first you must tell the Editor which line of text to work with. (When you edit, you always work with a complete line. This type of Editor is called "line-oriented".)

The line that is currently available for editing is identified by an invisible "pointer". You can identify this line by typing:

T (RETURN)

This causes the Editor to type out the line where the pointer is currently situated.

The pointer initially resides at the beginning of the first line in the workspace, but you can move it in several ways:

- you can send it back to the beginning or ahead to the end of the workspace;
- you can send it forward or backward a specified number of lines; and
- you can have it search forwards to look for a line that contains a specified character-string.

After you move the pointer, it then remains where it is until you specifically move it again: no other commands move the pointer.

To send the pointer back to the beginning of the workspace (that is, to the beginning of the first line), use a "B" command:

B (RETURN)

To send the pointer ahead to the end of the workspace (that is, to the beginning of the empty line following the last line of text), use a "Z" command:

Z (RETURN)

The "Z" command is particularly useful when you wish to add further text to the end of whatever is already in the workspace.

To move the pointer forward or backward a specified number of lines, use an "L" command:

L (number of lines) (RETURN)

The "number of lines" can be any number up to 255. To move backwards, use a negative number. For example, to move forward 5 lines, type:

L5 (RETURN)

To move backward 10 lines, type:

L-10 (RETURN)

Note: If you enter a number of lines greater than 255, the Miniterm will "wrap-around" the number: it will subtract 255, and move by the number of lines that is left. For example, if you tell it to move 260 lines, it will actually move 5 lines (260-255).

To send the pointer searching for a line containing a specified character-string, use an "S" command. An "S" command tells the Editor to search from the present position of the pointer, looking for a particular string of characters that you specify; this command leaves the pointer at the beginning of the first line it encounters that contains the specified character-string. The format for an "S" command is:

S (RETURN)

(character-string) (ESC)

The character-string may consist of any number of characters. The Editor searches for the specified string, stops with the pointer at the line containing the string, and types "!" to indicate that the command has been executed and that it is now ready to receive another command.

Note: If the Editor cannot find the specified character-string at all, it types the message "CAN'T FIND" and leaves the pointer where it was before you gave the "S" command.

INSERTING ADDITIONAL TEXT

You can insert one or more additional lines of text into the workspace using the "insert" command already described. The additional text is inserted at the location of the pointer when the "insert" command is given. The format for an "insert" command is:

I (RETURN)

(new text) (ESC)

After you make an insertion, the pointer is left at the beginning of the first line of the new text.

You are not limited to inserting individual lines using this method: you can in fact insert several consecutive lines of text using a single "insert" command.

Note: If the Miniterm rings its bell while you are inserting text, this indicates that you have filled up the Editor workspace. You will have to move at least some of the text from the workspace to a file in memory, on tape, or on disk. The procedures for these operations are described on the following pages:

page 34 filing to memory
page 38 filing to tape
page 91 filing to disk

An example insertion. Begin by positioning the pointer to the line where you wish to insert the new text. For this example, let us assume that the workspace contains the following text from a parts list:

11-653 Pen, black
11-655 Pen, red
11-658 Pencil, #2

We wish to add a new part, numbered 11-656, ahead of the third line shown above. We would begin by using a "search" command to position the pointer to the beginning of the third line:

S (RETURN)

658 (ESC)

This leaves the pointer at the line containing "658". Now we can insert the new text:

I (RETURN)

11-656 Pen, green (RETURN) (ESC)

This inserts a new line of text, leaving us with the following new text:

11-653 Pen, black
11-655 Pen, red
11-656 Pen, blue
11-658 Pencil, #2

The pointer is left at the beginning of the inserted line.

DELETING ("KILLING") UNWANTED TEXT

You can delete an unwanted line or lines of text from the workspace at any point using a "K" ("kill") command. The unwanted text is deleted from the location of the pointer when the "K" command is given. The format for a "K" command is:

K (number of lines) (RETURN)

In practice, you can kill a single line by using the command:

K (RETURN)

After you make a deletion, the pointer is left at the beginning of the first line following the deletion.

An example deletion. Begin by positioning the pointer to the first line you wish to kill. For this example, let us assume that the workspace contains the following text from a parts list:

11-653 Pen, black
11-655 Pen, red
11-656 Pen, blue
11-658 Pencil, #2

We wish to delete a discontinued part, numbered 11-655, listed in the second line shown above. We would begin by using an "S" command to position the pointer to the beginning of the second line:

S (RETURN)

655 (ESC)

This leaves the pointer at the beginning of the line containing "655". Now we can kill this line:

K (ESC)

This kills the unwanted line, leaving us with the following new text:

11-653 Pen, black
11-656 Pen, blue
11-658 Pencil, #2

The pointer is left at the beginning of line "11-656...".

CHANGING A SINGLE STRING OF TEXT

You can change any string of text (which can be more or less than one full line) into any other string of text (which again can be more or less than one full line, and which may not be the same length as the original string) by using a "C" command. The format for a "C" command is:

C (RETURN)

(old string) (ESC) (new string) (ESC)

Note that the Editor changes only the first occurrence of the specified string. After it makes a change, the Editor leaves the pointer at the changed line, then types "!" to indicate that the command has been executed and that it is now ready to receive a new command.

If the Editor cannot find the specified string, it types the message "CAN'T FIND". The pointer is not moved from its original location.

An example change. For a "C" command the position of the pointer is less critical than for other commands: the pointer must be positioned somewhere before the the text-string to be changed, but it need not be at exactly the right line. For this example, let us assume that the workspace contains the following text from a parts list:

```
11-653 Pen, black
11-655 Pen, red
11-656 Pen, blue
11-658 Pencil, #2
```

We wish to change a part-number 11-655 to 11-657, which is listed in the second line shown above. As long as the pointer is positioned at or before the second line, we can use the "C" command immediately:

C (RETURN)

11-656 (ESC) 11-657 (ESC)

Note that this last line actually prints out as:

11-656$11-657$

The Editor searches for the first text-string specified, and changes it to the second text-string specified:

```
11-653 Pen, black
11-655 Pen, red
11-657 Pen, blue
11-658 Pencil, #2
```

The pointer is left at the changed line.

CHANGING ALL OCCURRENCES OF A STRING OF TEXT

Sometimes a particular text-string occurs in several places throughout the text, and all occurrences have to be changed. To continue the parts-list example, if a particular part appears in several places in the text, and its number is changed, you wish to change every occurrence of the number.

Although you could use a "C" command repeatedly, the Editor makes it easy for you by providing a "CA" ("change all") command. The format for a "CA" command is very similar to that of an ordinary "C" command:

CA (RETURN)

(old string) (ESC) (new string) (ESC)

In this case, the pointer is left at the same position it was in before the "CA" command.

If there are many occurrances of the string to be changed, a "CA" command may take several minutes to execute.

Note: If the new string is longer than the old string, and if the change is made at many locations in the text, you could fill up the Editor workspace. However, the Editor checks for this possibility before executing the command; if a problem would occur, the Editor does not make any changes at all: instead it prints the message: "TOO LARGE". You will have to move at least some of the text from the workspace to a file in memory, on tape, or on disk. The procedures for these operations are described on the following pages:

page 34 filing to memory
page 38 filing to tape
page 91 filing to disk

CHANGING A SINGLE STRING OF TEXT BY LINE NUMBER

You can change a string of text into another string of text within a specified line. This is very similar to the ordinary "C" command, but it ensures that only the right occurrence of the text-string is changed, and that other occurrences are left unchanged. The format for a "change numbered line" command is:

C (line number) (RETURN)

(old string) (ESC) (new string) (ESC)

The line number can have any value in the range 0 - 255.

After you make a change, the pointer is left at the beginning of the changed line.

PRINTING OUT THE TEXT IN THE WORKSPACE

PRINTING STANDARD TEXT

At any time you have text in the workspace you can print (type) it out. You can print out any block of text, starting from the present position of the pointer, and consisting of up to 255 lines. (Reminder: To send the pointer back to the beginning of the workspace, type "B" and press the RETURN key.)

The format for a "type" command is:

T (number of lines) (RETURN)

Where the "number of lines" is 1 - 255.

For example, to type 10 lines, you enter the command:

T10 (RETURN)

To type out the entire workspace following the pointer (as long as it is less than 255 lines), simply ask the Editor to type more lines than there actually are.

To type just a single line of text - the line where the pointer is - just type:

T (RETURN)

You can abort a "type" command at any time by pressing the BREAK key.

Note: If you enter a number of lines greater than 255, the Miniterm will "wrap-around" the number: it will subtract 255, and print the number of lines that is left. For example, if you tell it to print 275 lines, it will actually print 20 lines (275-255).

```
11-653 Pen, black
11-655 Pen, red
11-656 Pen, blue
11-658 Pencil, ♪2
...
```

Figure 2-5. An example printout in standard form (without line numbers).

PRINTING TEXT WITH LINE NUMBERS

If you wish, the Editor will number the lines of text as it prints them out. This can be useful: it makes it very easy to revise the text using "change" commands with line numbers.

The format for a "type with line numbers" command is:

TH (number of lines) (RETURN)

The lines in the workspace are numbered sequentially starting with 000 for the first line.

```
000  11-653 Pen, black
001  11-655 Pen, red
002  11-656 Pen, blue
003  11-658 Pencil, #2
004  ...
```

Figure 2-6. An example printout with line numbers.

USING MEMORY FILES

You can store part or all of the contents of the workspace as a memory file. Putting the text into a memory file keeps it convenient for use: later you can read it back into the Editor workspace for further editing, you can record onto the minicassette as a tape file, you can transmit it to a host computer, and so on.

The memory can hold a maximum of 16 separate memory files at any time, if there is sufficient space in the memory to hold them all. (The memory can hold a total of about 30K characters between its files and the Editor workspace; see "The Organization of the Memory" on page 21.) As a convenience, you can obtain a directory of the files currently in memory.

WARNING

A memory file is only temporary. When you turn off the power to the Miniterm, all memory files are deleted.

WRITING TEXT INTO A MEMORY FILE

Before you store text into a memory file, you must position the pointer to the first line in the workspace that is to be stored. Use the usual pointer-positioning commands for this.

The command for writing from the workspace into memory is a "WM" ("write memory") command, which has the format:

WM (RETURN)

The Editor responds by asking "NAME": respond by entering a name that you wish to assign to this file. The filename may consist of up to eight alphanumeric characters.

The Editor then goes on to ask "NL", which means "specify the number of lines to be recorded". You now have two choices: you can record the entire contents of the workspace (following the pointer) by pressing the RETURN key; or you can specify a number of lines:

(number of lines) (RETURN)

The "number of lines" must be specified by three digits, and may have a value of up to 255.

READING TEXT FROM A MEMORY FILE

You can retrieve the text from a memory file, and put it back into the Editor workspace, by using an "RM" ("read memory") command. This command reads the entire contents of the memory file, and appends it to the end of whatever text is already in the workspace. The format for an "RM" command is:

RM (RETURN)

The system responds by asking "NAME": reply by entering the name of the file you wish to read:

(file name) (RETURN)

The Editor reads the contents of the memory file, and appends it to the text in its workspace. The pointer remains in the position it was in before you gave the "RM" command.

Note that the text remains in the memory file. If you intend to modify the text in the workspace, and subsequently write it back into the same file, you must first "purge" the old text from the memory file. This operation is described on the next page.

Possible Problems. Two possible problems can occur during a "read memory" operation. They result in the following error messages.

CAN'T FIND — The Editor cannot find the file you named; perhaps you typed the name incorrectly.

TOO LARGE — The text in the memory file is too large to fit in the remaining workspace.

PURGING (DELETING) A MEMORY FILE

Very often you wish to read the text from a memory file into the Editor workspace, revise it in some way, then write it back into the same memory file. However, there are two points you must remember:

- When you read from a memory file, the file remains unchanged in memory.
- You cannot write into an existing memory file.

This means that if you read old text from a file, revise it, and then wish to write the revised text back into the same file, then you must delete ("purge") the old text from the file before you write the new text back in. The format for a purge command is:

PM (RETURN)

The Editor responds by asking "NAME": reply by entering the name of the file you wish to purge:

(file name) (RETURN)

The Editor now purges the entire contents of that memory file, including the filename.

PRINTING A DIRECTORY OF MEMORY FILES

The Miniterm can store up to 16 files in its memory. If you wish to know what files are currently in memory, you can ask for a directory. The format for a directory command is:

DM (RETURN)

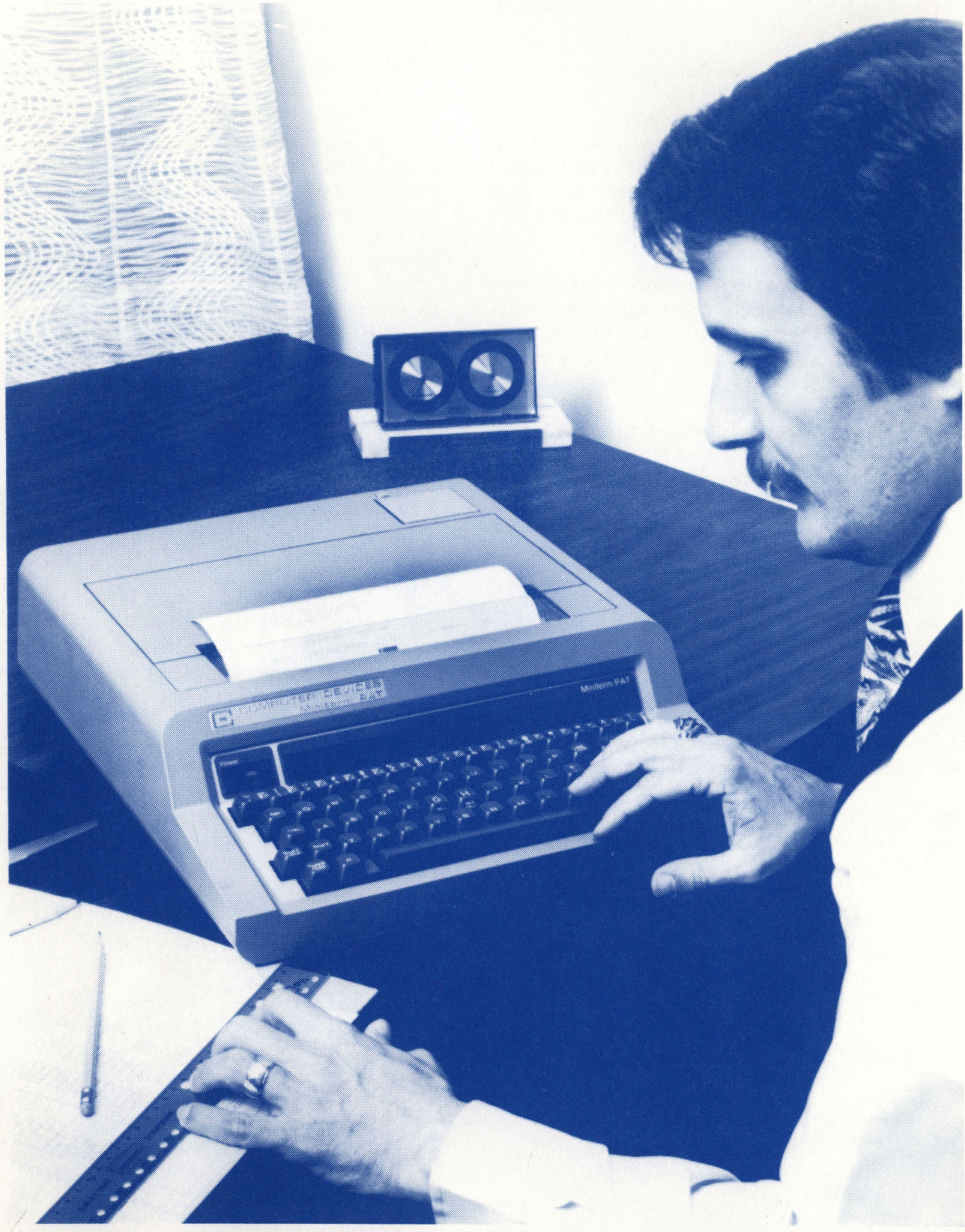
The Editor responds by printing a directory in the following format:

```
NAME        TP BLK # CHR

DATA1        M 001 00206
DATA1.2      M 003 00618
FILE020      M 001 00007
BASICS       M 005 01243

AVAIL        M 107 27178
```

The headings of this directory have the following meanings:

NAME — The name of the file.
TP — The file type, in this case "M" for memory.
BLK — The number of blocks of data in the file. Memory files are made up of 256-character blocks.
CHR — The number of characters in the file.

The bottom line of the directory ("AVAIL") shows the amount of storage still available in the memory, in terms of the number of blocks and the number of characters.


Modem PAT

USING TAPE FILES

You can store the contents of the workspace into a tape file. Putting the text onto tape keeps it secure: it cannot be deleted accidentally. Later you can read the text back into the Editor workspace for further editing, for transmission to a host computer, and so on.

If you used tabs to format your text, you will also want to record a "control" file; the control file stores the tabular set-up for use when the text file is read back for subsequent use.

The tape has two sides, designated "A" and "B". Each sides can be used to store many separate files - the exact number depends on the size of the individual files. (A tape can hold a total of about 25K data characters on each side, or about 50K data characters between the two sides.) As a convenience, you can obtain a directory of the files currently on tape.

Instructions for putting a minicassette into the Miniterm are provided in Section 1, and also on the inside of the top cover of the Miniterm itself.

Before you record anything onto tape, however, you must position the tape correctly. If you do not position the tape correctly, you may erase material that is already on the tape.

POSITIONING THE TAPE

If the tape is new, or if you wish to record over whatever is already on the tape, you must move the tape to its beginning. If the tape already contains one or more files that you wish to keep, you must move the tape forward to the end of those files.

To send a new (or reused) tape to the beginning, use a "G" command:

G (RETURN)

To send a partly used tape to the end of the existing files, first use a "G" command, then use a "Y" command:

G (RETURN)

Y (RETURN)

The tape status is shown by two indicators next to the Tape Fwd/Rwd switch at the right end of the switch panel. When you give a "G" or a "Y" command, the tape-in-motion (< >) indicator at the top of the Tape Fwd/Rwd switch flashes as the tape moves to the required location. When the tape is positioned correctly, the Rdy indicator at the bottom of the Tape Fwd/Rwd switch lights up steadily.

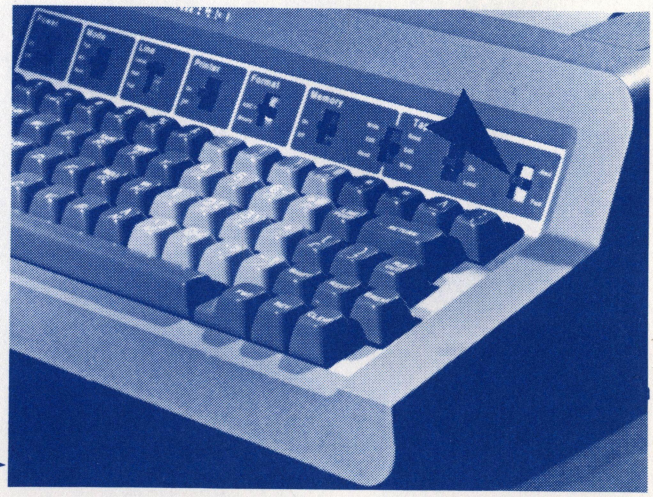


Figure 2-7. The Tape Fwd/Rwd switch and its associated indicators.

WRITING THE TEXT INTO A TAPE FILE

When the tape is ready to receive the new file, as indicated by a steadily illuminated "Rdy" indicator, you can give the Editor a "WT" ("write to tape") command:

WT (RETURN)

The Editor responds by asking "NAME"; reply by typing a name for this file:

(file name) (RETURN)

The filename may consist of up to eight characters. If you are using the standard Editor, these may be any alphanumeric characters you wish (that is, the letters A-Z, and the digits Ø-9). However, if you are using the DOS Editor, the first character of the filename must be a letter, and the remaining characters may be alphanumeric.

The Editor writes the file onto tape. When it finishes this task, the Editor types the message "NO ERROR".

Possible Problems. If the Miniterm responds to a "WT" command by typing "ERROR ØØ7" or "ERROR ØØ8", it is unable to write on the tape.

WRITING THE TABS INTO A "CONTROL" FILE

If you have set up tabs for use with the text in the workspace as described on page 25, you must record them in the form of a separate "control file". This is done by a simple command:

HT (RETURN)

The control file is automatically assigned the name "@1".

READING TEXT FROM A TAPE FILE

You can retrieve the text from a tape file, and put it back into the Editor workspace, by using a "read tape" command. This command reads the entire contents of the file, and appends it to the end of whatever text is already in the workspace.

Before you read a new file from tape, you must rewind the tape by using a "G" command:

G (RETURN)

When the tape has rewound, the "TAPE READY" indicator on the control panel lights up. Now you can give the Editor a "read from tape" command:

RT (RETURN)

The system responds by asking "NAME"; enter the name of the file you wish to read:

(file name) (RETURN)

The Editor reads the contents of the tape file, and appends it to the text in its workspace. When it finishes this task, the Editor types the message "NO ERROR".

Possible Problems. If it cannot find the file you asked for, the Miniterm types the message "ERROR ØØ2". If this happens there are two common errors to check for:

- did you enter the filename correctly?
- did you rewind the tape (using a "G" command) before you asked for the file to be read?

If the text in the tape file is too large to fit in the remaining workspace, the Editor prints the message "ERROR Ø11".

Other possible error codes are described on page 47.

READING THE TABS FROM A "CONTROL" FILE

If you have recorded a "control file" (named "@1") containing the tab set-up for use with a particular tape file, you must retrieve the control file along with the text file.

To read a control file, you must place the Miniterm in the KSR terminal mode:

1 turn the Memory switch Off;
2 press the Tape Off/On/Load switch to Load, and wait for the tape-in-motion indicator to go out; and
3 set the Memory/Tape Read/Edit/Write switch to Write-Read.

Now press the START/STOP key in the keyboard. The tape-in-motion indicator lights while the tape is moving; when this indicator goes out, and the Tape Rdy indicator lights up, the control file has been loaded.

Restore the Miniterm to the Editor mode, as described on page 23, before proceeding.

PRINTING A DIRECTORY OF TAPE FILES

The Miniterm can store many files on a tape. If you wish to know what files are currently on the tape, you can ask for a directory; however, be sure to rewind the tape using a "G" command first. The format for a directory command is:

G (RETURN)

DT (RETURN)

The Editor responds by printing a directory in the following format:

```
!DT
NAME        TP BLK # CHR

DATA1        T ØØ1 ØØ2Ø6
DATA1.2      T ØØ3 ØØ618
FILEØ2Ø      T ØØ1 ØØØØ7
BASICS       T ØØ5 Ø1243
```

The headings of this directory have the following meanings:

NAME — The name of the file.

TP — The file type, in this case "T" for tape. If there is a fault in the file, there is also a prefix character (*, %, #, or $) that indicates the type of fault.

BLK — The number of blocks of data in the file. Tape files are made up of blocks as follows:
- The first block is a header block containing 65 data characters; and
- succeeding blocks each contain up to 83 data characters.

CHR — The number of characters in the file.

LEAVING THE EDITOR FOR ANOTHER OPERATIONAL MODE

When you no longer require the Editor, you can switch the Miniterm to one of several other operating modes:

- the ASR/KSR mode, in which the Miniterm functions as a terminal on line to a host computer;
- the BASIC interpreter mode, in which the Miniterm functions as an independent computer; or
- the DOS mode, in which the Miniterm operates under the control of the optional Disk Operating System.

As a general rule, it is preferable to clear all the memory files before you leave the Editor mode. If the memory files are still required, they can be recorded as tape or disk files.

You can keep the memory files if you wish to use them in the new operating mode, but they do consume valuable memory space.

Note: If you switch from the Editor mode to the BASIC interpreter mode, and you retain a large memory file (larger than 10K characters), you may encounter problems. This is because a certain amount of memory is required during the transition process. To ensure that these problems do not occur, it is wise to record all large memory files as tape or disk files before making the transition.

TRANSFERRING CONTROL TO THE ASR/KSR TERMINAL MODE

To transfer to the ASR mode, use the command:

E (RETURN)

The Miniterm asks "ARE YOU SURE"; you must reply:

Y

If you answer anything but "Y" (for "yes"), the "E" command is aborted: the Miniterm remains under the control of the Editor, and prints the messages "RESET" and "CONTINUE".

If there are still some existing memory files, the Miniterm goes on to ask "DELETE MEMORY FILES?"; reply Y ("yes"): the editor workspace is deleted, and control is transferred to ASR. The Miniterm then goes into the ASR mode: see Section 4 for details.

If the "DELETE MEMORY FILES" question makes you realize that there is still important data in the workspace, you can reply N ("no"); the Miniterm then types "RESET" and "CONTINUE", and remains in the Editor mode.

TRANSFERRING CONTROL TO THE BASIC INTERPRETER

If the Editor workspace is empty, or is no longer needed, use an "IB command to tranfer control to the BASIC interpreter:

IB (RETURN)

As it transfers control, this command deletes any text from the Editor workspace.

If you wish to keep the text in the workspace for use as a BASIC file, use an "IC" command to tranfer control to the BASIC interpreter:

IC (RETURN)

However, when you use an "IC" command you must remember the following:

- The text in the Editor workspace must be a BASIC program, that is, the lines must be numbered, and they must be no more than 80 characters long.
- There must be room in the memory for the existing workspace file, a copy of it in a temporary memory file, and any other memory files that are still in existance. This may limit the workspace to 10K characters or less. If you use an "IC" command and there is not enough memory space available, the Miniterm aborts the operation, leaves the Editor workspace unchanged, and prints the message "CAN'T DO".
- There can be no more than 15 memory files resident in the memory, because the Miniterm uses one of the 16 possible memory files as a temporary file during the transfer process.

When the Miniterm enters the BASIC interpreter mode, it indicates its status by the usual BASIC prompt:

>

See Section 3 for further details of using the BASIC interpreter.

TRANSFERRING CONTROL TO THE DOS EXECUTIVE

When you have a Disk Operating System (DOS), you can transfer control directly from the Editor to the DOS Executive.

If the Editor workspace is empty, or is no longer needed, you can tranfer control to the DOS Executive using an "F" command:

F (RETURN)

As it transfers control, this command deletes any text from the Editor workspace.

When the Miniterm enters the DOS Executive mode, it responds by typing "DOS EXECUTIVE" followed by the usual Executive prompt:

.

See Section 7 for further details of using the DOS Executive.

REFERENCE LIST OF EDITOR COMMANDS

POSITIONING THE POINTER IN THE WORKSPACE

Send the pointer to the top of the workspace	B (RETURN)
Send the pointer to the bottom of the workspace	Z (RETURN)
Search for a text-string, position the pointer at the beginning of that line .	S (character-string) (RETURN)

REVISING THE TEXT IN THE WORKSPACE

Insert text at the pointer	I (RETURN) (text) (ESC)
Change the first character-string into another string of characters	C (RETURN) (old string) (ESC) (new string) (ESC)
Change all occurrences of a specified character-string into another character-string	CA (RETURN) (old string) (ESC) (new string) (ESC)
Change a specified character-string in a specified line into another character-string	C (line number) (RETURN) (old string) (ESC) (new string) (ESC)
Kill a single line of text at the pointer	K (RETURN)
Kill several lines of text starting at the pointer	K (# of lines) (RETURN)

SETTING AND CLEARING TABS

Set a tab	TB (position) (RETURN)
Clear all tabs	TX (RETURN)

WRITING AND READING MEMORY FILES

Write the workspace as a memory file . .	WM (RETURN) (file name) (RETURN)
Read a memory file into the workspace .	RM (RETURN) (file name) (RETURN)
Purge a memory file	PM (RETURN) (file name) (RETURN)
List a directory of memory files	DM (RETURN)

WRITING AND READING TAPE FILES

Write load (wind the tape forward to the end of the present files)	Y (RETURN)
Write the workspace as a tape file . . .	WT (RETURN) (file name) (RETURN)
Write a control file	HT (RETURN)
Read load (wind the tape back to the beginning)	G (RETURN)
Read a tape file into the workspace . .	RT (RETURN) (file name) (RETURN)
List a directory of tape files	DT (RETURN)

LEAVING THE EDITOR FOR ANOTHER OPERATIONAL MODE

Leave the Editor, enter the ASR mode . .	E (RETURN)
Leave the Editor, enter the BASIC interpreter mode; clear the workspace .	IB (RETURN)
Leave the Editor, enter the BASIC interpreter mode; save the workspace . .	IC (RETURN)
Leave the Editor, enter the DOS mode* .	F (RETURN)

**The DOS mode can be used only if the Miniterm is equipped with a Disk Operating System.*

REFERENCE LIST OF ERROR CODES

The Editor uses the codes listed to indicate errors. The exact interpretation of many of these codes requires an intimate knowledge of the Miniterm, and should be left to a skilled CDI technician. However, the brief explanations listed at the right may be useful to you in diagnosing simple problems, and in communicating with CDI when problems occur.

001 In reading from tape, the Miniterm has encountered bad data in the required file.

002 In reading from tape, the Miniterm cannot find the required file.

003 In reading from tape, the Miniterm has found the required file, but the file lacks a trailer.

004 In writing to or reading from tape, the operation has been aborted because BREAK key was pressed.

005 In reading from tape, the Miniterm has found the required file, but the file's trailer contains incorrect data.

006 In reading from tape, the Miniterm has found the required file, but the file's block numbers are out of sequence.

007 In writing to tape, the Miniterm is unable to initiate writing.

008 In writing to tape, the Miniterm has initiated writing, but is unable to continue.

011 In reading from tape, the Miniterm is unable to load the required file into the Editor workspace because there is insufficient room in the memory.

SECTION 3

RUNNING A BASIC PROGRAM

INTRODUCTION

The 1206 Miniterm PRO can be used as an independent computer running under the control of a BASIC interpreter. This means that the Miniterm will run programs that are written in a popular computer language called BASIC.

Your company may use a BASIC program to control your Miniterm for a particular application. In this case, your company will provide the BASIC program on a minicassette, together with specific instructions for using that program. However, there are some general instructions for running a BASIC program that you should know, and they are provided in this section.

The overall procedure for using a BASIC program is as follows:

1 Put the BASIC interpreter in control of the Miniterm.

2 Put the minicassette into the tape drive of the Miniterm.

3 Load the required program from the tape into the Miniterm.

4 Run the program.

Each of these operations is described in detail below.

PUTTING THE BASIC INTERPRETER IN CONTROL OF THE MINITERM

You put the BASIC interpreter in control of the Miniterm from the Editor program. If the Editor program is already in control of the Miniterm, you do not need the directions below: go directly to the top of page 50. If the Miniterm is switched off, turn it on and put the Editor in control by setting the slide switches on the switch panel as follows:

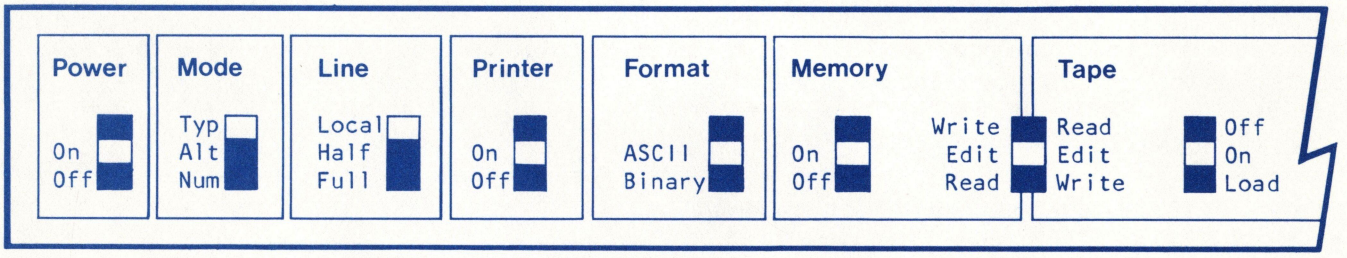


Figure 3-1. To use the Miniterm in the Editor mode, set the switches as shown here.

A few seconds after you turn on the power, the Miniterm types out a diagnostic message such as:

```
VER F6.00 OK
```

Press the START/STOP key at the lower left corner of the keyboard: the Miniterm responds:

```
EDITOR
!
```

The Editor is now in control of the Miniterm.

Note: A red "Rdy" indicator may be lit (or flashing) in the lower right corner of the switch panel above the keyboard. This indicator tells you the status of the tape cassette, but you can ignore it until you are ready to use the tape.

If the Editor workspace is empty, or is no longer needed, you can tranfer control to the BASIC interpreter using an "IB" command:

IB (RETURN)

As it transfers control, this command deletes any text from the Editor workspace.

If you wish to keep the text in the workspace for use as a BASIC file, you tranfer control to the BASIC interpreter using an "IC" command:

IC (RETURN)

However, there are several factors you must bear in mind when you use this command:

- The text in the Editor workspace must be a BASIC program, that is, the lines must be numbered, and they must be no more than 80 characters long.
- There must be room in the memory for the existing workspace, a copy of it in a temporary memory file, and any other memory files that are still in existance. This may limit the workspace to 10K characters or less. If you use an "IC" command and there is not enough memory space available, the Miniterm aborts the operation, leaves the Editor workspace unchanged, and prints the message "CAN'T DO".
- There can be no more than 15 memory files resident in the memory. This is because the Miniterm uses one of the 16 possible memory files as a temporary file during the transfer process.

The Miniterm then goes into the BASIC mode. It indicates its new status by typing a prompt in the form of a carat:

>

This tells you the BASIC interpreter is ready to receive instructions.

LOADING THE BASIC PROGRAM FROM TAPE

Directions for putting a minicassette into the Miniterm are provided in Section 1, and also on the inside of the top cover of the Miniterm itself.

Before you read a program from the tape, you should check that the tape is rewound. If the tape is not rewound, the Miniterm may be unable to find the program you want. The tape is controlled by a switch at the extreme right end of the switch panel, shown in Figure 3-2. This Figure also shows the locations of the tape status indicators: the tape-in-motion (< >) indicator at the top of the Tape Fwd/Rwd switch flashes when the tape is moving; and the Rdy indicator at the bottom of the Tape Fwd/Rwd switch lights up when the tape is ready for use. (If the Tape Fwd/Rwd indicator is flashing, the tape is rewound; if it is lit steadily, the tape is stopped somewhere along its length.)

To rewind the tape, momentarily press the Tape Fwd/Rwd switch upwards to the Rwd position; this is a spring-loaded switch that returns to its center position when released. The tape-in-motion indicator will flash for a few seconds as the Miniterm ensures that the tape is rewound; then this indicator will go out, and the Rdy indicator will begin flashing to indicate that the tape is rewound and ready for use.

To read a program from the tape, respond to the carat prompt by typing:

LOAD TAPE1, (program name) (RETURN)

This means "load from tape input, the program name is (program name)".

The Miniterm responds as follows:

1 The tape-in-motion indicator flashes for several seconds.
2 The Read sign on the Tape side of the Write/Edit/Read switch lights up for part of the time the tape-in-motion indicator is lit. Then
3 Both indicators go out, and the Miniterm types a new prompt carat.

The program has been loaded correctly, and is now ready to run. It is good practice to rewind the tape at this time: momentarily press the Tape Rwd/Fwd switch up to the Rwd position.

Possible Problems. Occasionally the Miniterm may encounter problems in loading a program from a tape. If it does encounter a problem, the Miniterm types an error message.

Figure 3-2. The location of the Tape Fwd/Rwd switch and its associated indicators.

RUNNING A BASIC PROGRAM

To start the BASIC program running, simply type a "run" command:

RUN (RETURN)

The program will begin its operation.

At this time you should turn to the specific instructions provided with the BASIC program for further details.

LEAVING THE BASIC INTERPRETER FOR ANOTHER OPERATIONAL MODE

When you no longer require the BASIC interpreter, you can switch the Miniterm to one of two other operating modes:

- the Editor mode, in which the Miniterm can be used to create and maintain data files; or
- the DOS mode, in which the Miniterm operates under the control of the optional Disk Operating System.

TRANSFERRING CONTROL TO THE EDITOR

To transfer control of the Miniterm to the Editor, use the exit command:

```
EXIT (RETURN)
```

The Miniterm responds by typing:

```
EDITOR
```

followed by the usual Editor prompt:

```
!
```

See Section 2 for further details.

TRANSFERRING CONTROL TO THE DOS EXECUTIVE

When you have a Disk Operating System (DOS), you can transfer control directly from BASIC to the DOS Executive.

To transfer control of the Miniterm to the DOS Executive, use the disk command:

```
DISK (RETURN)
```

The Miniterm responds by typing:

```
DOS VERSION 1.0
```

followed by the usual Executive prompt:

```
.
```

See Section 7 for further details.

SECTION 4

USING THE MINITERM AS A KSR/ASR TERMINAL

INTRODUCTION

THE MINITERM AS A KSR/ASR TERMINAL

The 1206 Miniterm PRO can be used as a terminal for a remote ("host") computer, operating in the KSR or the ASR mode.

In the KSR (keyboard send/receive) mode, the Miniterm functions as a "dumb" terminal: the Miniterm can transmit data to the host computer from the keyboard; and it can receive data from the host computer to the printer.

In the ASR (automatic send/receive) mode, the Miniterm functions as a "smart" terminal: the Miniterm can transmit data from the keyboard, from memory, or from tape; and it can receive data from the host computer to the printer, the memory, or the minicassette.

In the ASR mode, the Miniterm can also be used to transfer data directly from tape to memory, and from memory to tape.

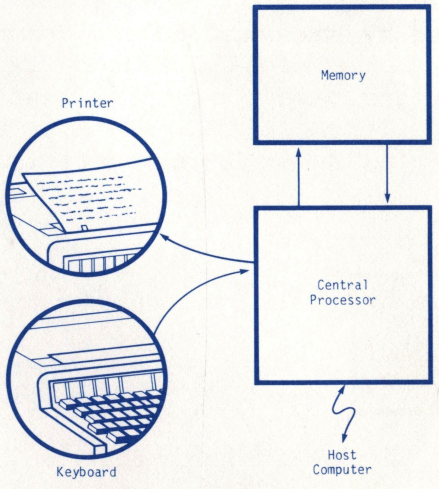


Figure 4-1. When the Miniterm is used as a "dumb" (KSR) terminal, it can transmit keyboard data to the host computer, and can receive printer data from the host.

FULL AND HALF DUPLEX LINE MODES

The communication line between the Miniterm and the host computer can operate via a full-duplex or a half-duplex line.

On a full duplex line (see Figure 4-3), the data from the Miniterm keyboard goes directly to the host computer but not to the Miniterm printer. The host computer must "echo" the data to the Miniterm printer so you can verify that you entered the correct data.

On a half duplex line (see Figure 4-4), the data from the Miniterm keyboard goes simultaneously to both the host computer and to the Miniterm printer. The data you type at the keyboard therefore appears immediately on the Miniterm printer.

The use of a full- or half-duplex line is made by the Half and Full positions of the Line Local/Half/Full switch on the switch panel above the keyboard on the Miniterm. If you are unsure which type of line your company's computer uses, consult your data processing personnel.

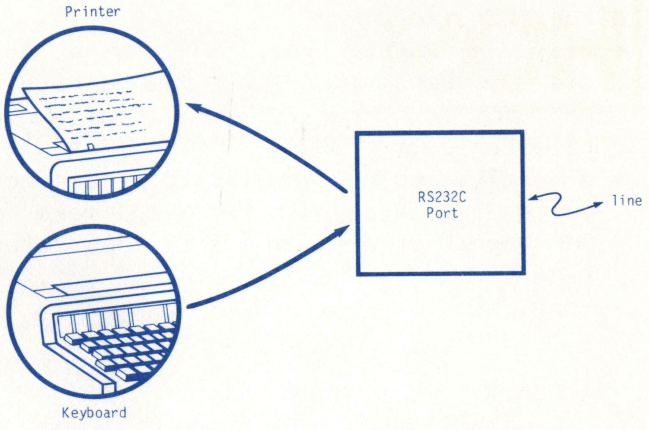


Figure 4-3. A block diagram of a full-duplex connection.

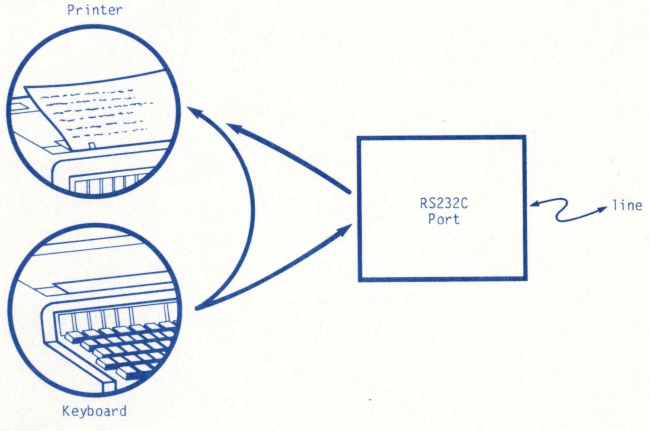


Figure 4-4. A block diagram of a half-duplex connection.

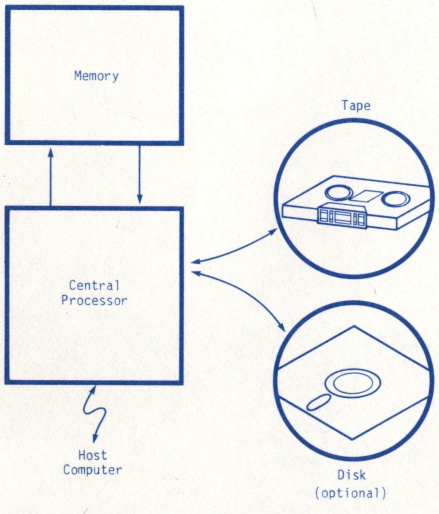


Figure 4-2. When the Miniterm is used as a "smart" (ASR) terminal, it can transmit keyboard, memory, or tape data to the host computer; and it can receive printer, memory, or tape data from the host.

CONNECTING THE MINITERM TO THE HOST COMPUTER

For KSR/ASR operation, the Miniterm can be connected to the host computer in either of two ways:

- via a telephone line, using an acoustic coupler built into the Miniterm to make a temporary connection to a telephone; or
- directly, using an RS232C interface built into the Miniterm to make a permanent connection to a dedicated line.

USING THE ACOUSTIC COUPLER

The 1206 Miniterm is equipped with an acoustic coupler that is built into the rear panel (see Figure 4-5).

One end of the coupler is on an arm that is normally folded into a recess in the panel; it is held in this position by a spring. To make use of the coupler, you must swing this arm out, and press it into a catch that holds it in the open position.

When the acoustic coupler has been unfolded, it is easy to fit a telephone handset into the two rubber cups. Be sure that the end of the phone with the cord attached goes into the correct cup: this cup is marked "PHONE CORD". Press the handset firmly into the cups to ensure effective communication.

When you are finished with the acoustic coupler, remove the telephone handset and hang it up. Close the acoustic coupler by pressing the catch to the left, and allowing the arm to spring closed. (Refer to the diagram on the rear panel of the Miniterm.)

Figure 4-5. The rear panel of the Miniterm, showing the acoustic coupler opened and a telephone handset installed.

USING THE RS232C INTERFACE

The 1206 Miniterm is equipped with an RS232C interface that terminates in a connector on the rear panel (see Figure 4-6).

The host computer must be equipped with an RS232C interface and a cable to the Miniterm. At the Miniterm end, this cable must be equipped with a 25-pin female connector that mates with the connector on the Miniterm.

If you have to fit the host-computer cable with a connector, use the connections shown below.

PIN No.	RS232C DESIGNATION	FUNCTION	INPUT/ OUTPUT
1	AA	protective ground	--
2	BA	transmit data	output
3	BB	receive data	input
4	--	not used	--
5	--	not used	--
6	CC	data set ready	input
7	AB	signal ground	--
8	--	not used	--
9	--	not used	--
10	--	not used	--
11	SA	supervisory transmitted data	output
12	SB	supervisory received data	input
13	--	not used	--
14	--	not used	--
15	--	not used	--
16	--	not used	--
17	--	not used	--
18	--	not used	--
19	--	not used	--
20	CD	data terminal ready	output
21	--	not used	--
22	--	not used	--
23	--	not used	--
24	--	not used	--
25	*	modem disable (negative-true)	input

**Jumper pin 25 to pin 7 to disable the modem.*

When the RS232C interface is used, pin 25 of the connector must be connected to pin 7 (signal ground). This disables the acoustic coupler, which cannot be used when the RS232C link is used.

If you use the line connection to drive a passive device such as a printer, you can simulate the normal line connection by connecting pin 6 to pin 20. This turns on the LINE indicator, and allows the Miniterm to transmit data.

Figure 4-6. The RS232C connector on the rear panel of the Miniterm.

All logic levels on the RS232C interface are:

- logic Ø = +3 to +12 V
- logic 1 = -3 to -12 V

Each output from the Miniterm can drive a load of 3 kilohms.

USING THE MINITERM AS A KSR TERMINAL

To set the Miniterm up as a KSR terminal, set the slide switches on the panel immediately above the keyboard as follows:

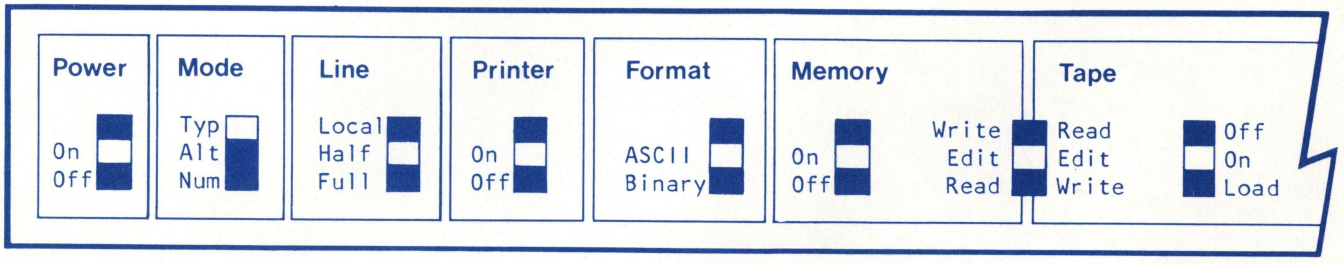


Figure 4-7. To use the Miniterm as a KSR terminal, using a half-duplex line, set the switches as shown here; for a full-duplex line, set the Line switch to Full. Note the Line indicator next to the Line switch.

If the Miniterm is connected to the host computer directly via an RS232C interface, setting the switches puts it on-line immediately. However, if you are using a telephone to make the connection to the host, you must first make the required telephone call, and fit the telephone handset into the acoustic coupler in the rear of the Miniterm as described above.

In either case, when the host computer has been on-line for about five seconds, the Line indicator next to the Line switch lights up to indicate the the Miniterm is ready to transmit/receive data via the line.

Note: A red "Rdy" indicator may be lit (or flashing) in the lower right corner of the switch panel above the keyboard. This indicator tells you the status of the tape cassette, but you can ignore since you cannot use it in the KSR mode.

The Miniterm is now operational as a KSR computer terminal. Whatever you type is sent to the computer; if the Miniterm is operating in the half-duplex mode, everything you type is also printed out on the printer; if the Miniterm is operating in the full-duplex mode, what you type is usually echoed by the host computer, and is printed out on the printer. In either case, messages from the host computer are printed out on the printer. In other words, the Miniterm behaves like an ordinary computer terminal.

USING THE MINITERM AS AN ASR TERMINAL

As an ASR terminal, the Miniterm can transfer data in either of two possible modes:

- to and from the memory; and
- to and from the tape.

Each of these requires a slightly different switch set-up, and slightly different operating procedures.

Note: The Miniterm can also transfer data in a third mode: to the printer and from the keyboard. However, this is simply the KSR mode described on the previous pages.

If the Miniterm is connected to the host computer directly via an RS232C interface, setting the switches puts it on-line immediately. However, if you are using a telephone to make the connection to the host, you must first make the required telephone call, and fit the telephone handset into the acoustic coupler in the rear of the Miniterm as described above.

In either case, when the host computer has been on-line for about five seconds, the Line indicator next to the Line switch lights up to indicate the the Miniterm is ready to transmit/receive data via the line.

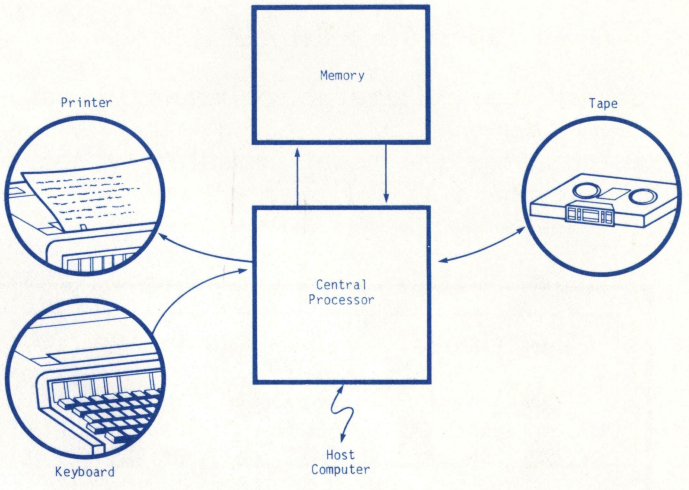


Figure 4-8. The various modes of data transfer for the Miniterm operating as an ASR terminal.

TRANSMITTING DATA FROM MEMORY

Set-up the Miniterm to transmit data from memory by setting the slide switches on the panel immediately above the keyboard as follows:

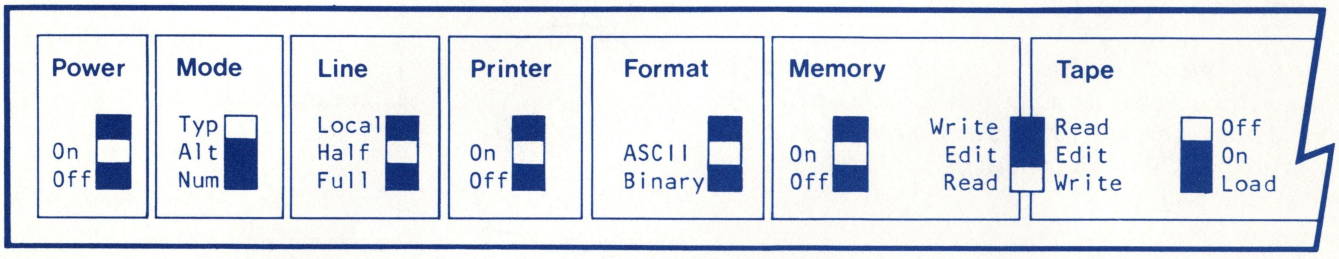


Figure 4-9. To use the Miniterm to transmit data from memory in the ASR mode, set the switches as shown here. In this example, the Line switch is set for Half duplex operation; it could alternatively be set for Full. Also, the Format switch is set to ASCII; it could be set to Binary.

When you have set the switches properly, the Read indicator next to the Memory side of the Write/Edit/Read switch begins to flash.

Specify where in memory the data transmission is to begin. The beginning of the memory data is identified by an invisible "pointer", which can be moved from its initial position at the beginning of the first memory file to the required starting position as follows:

- Move the pointer forward one character in the current file by pressing the FWD key. The character is printed for your reference.
- Move the pointer backward (in reverse) one character in the current file by pressing the REV key. The character is printed for your reference.
- Move the pointer forward to the first character in the next file in memory by holding down the SHIFT key and pressing the FWD key.
- Move the pointer backward (in reverse) to the first character in the previous file in memory by holding down the SHIFT key and pressing the REV key.
- Move the pointer backward (in reverse) to the beginning of the first file in memory by holding down both the SHIFT and REPT keys and pressing the REV key for three seconds.

You can use these commands in any order, as appropriate, to position the pointer to the exact position at which you want to start transmitting or receiving data.

Begin transmitting memory data to the host computer. The transmission begins when:

- you hold down the CTRL key and type Q (X-ON) at the keyboard (ASCII Format only); or
- the host computer transmits an X-ON signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard.

During the transmission, the Memory - Read indicator is lit up steadily instead of flashing.

The Miniterm stops transmitting data when:

- all the data in the memory has been sent; or
- you hold down the CTRL key and type S (X-OFF) at the keyboard (ASCII Format only); or
- the host computer transmits an X-OFF signal via the line (ASCII Format only); or
- you set the Memory On/Off switch to Off; or
- you set the Read/Edit/Write switch to either Edit or Write; or
- you press the START/STOP key at the keyboard.

The end of the transmission is indicated when the Memory - Read indicator changes from steady to flashing, or goes out altogether.

RECEIVING DATA INTO MEMORY

Set-up the Miniterm to receive data into memory by setting the slide switches on the panel immediately above the keyboard as follows:

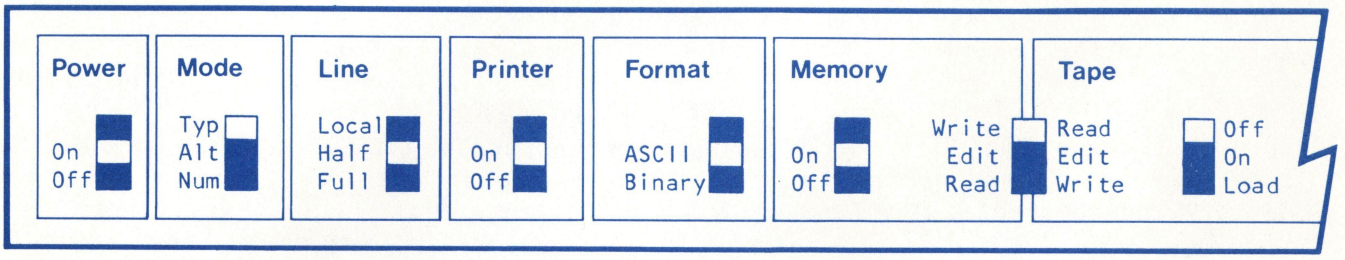


Figure 4-10. To use the Miniterm to receive data into memory in the ASR mode, using a half-duplex line, set the switches as shown here; for a full-duplex line, set the Line switch to Full. Also, the Format switch is set to ASCII; it could be set to Binary.

When you have set the switches properly, the Write indicator next to the Memory side of the Write/Edit/Read switch begins to flash.

Specify where in memory the received data is to be stored. The beginning of the memory data is identified by an invisible "pointer", which can be moved from its initial position at the beginning of the first memory file to the required starting position. For receiving data, you will usually want to position the pointer to the end of the last file currently in the memory - in other words, to the beginning of a new file:

- Move the pointer forward to the end of the last file in memory by holding down the SHIFT and REPT keys and typing FWD for three seconds.

You can also use all the commands described on page 62 for transmitting data from the memory.

Begin receiving memory data from the host computer. The reception begins when when:

- you hold down the CTRL key and type R (TAPE) at the keyboard (ASCII Format only); or
- the host computer transmits a TAPE signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard.

During the reception, the Memory - Write indicator is lit up steadily instead of flashing.

The Miniterm stops receiving data when:

- you hold down the CTRL key and type T (TAPE-bar) at the keyboard (ASCII Format only); or
- the host computer transmits a TAPE-bar signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard; or
- you set the Memory On/Off switch to Off; or
- you set the Read/Edit/Write switch to either Edit or Read; or
- the memory overflows.

The end of the reception is indicated when the Memory - Write indicator changes from steady to flashing, or goes out altogether. If the Error indicator in the Format section of the switch panel begins flashing, the memory has overflowed.

TRANSMITTING DATA FROM TAPE

Set-up the Miniterm to transmit data from tape by setting the slide switches on the panel immediately above the keyboard as follows:

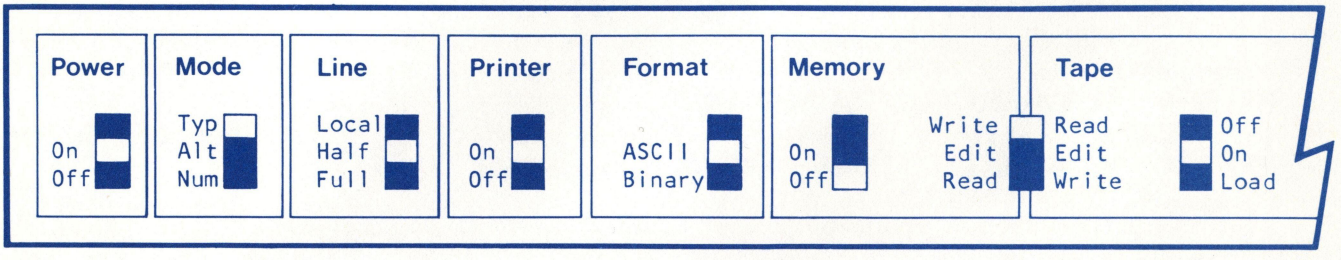


Figure 4-11. To use the Miniterm to transmit data from tape in the ASR mode, using a half-duplex line, set the switches as shown here; for a full-duplex line, set the Line switch to Full. Also, the Format switch is set to ASCII; it could be set to Binary.

When you have set the switches properly, the Read indicator next to the Tape side of the Write/Edit/Read switch begins to flash if the tape is advanced off clear leader.

Position the tape to the location where the data is to be read, using the commands described below. Note the action of the tape indicators: The tape-in-motion (< >) indicator at the top of the Tape Fwd/Rwd switch flashes while the tape is moving. When the tape stops, this indicator goes out, and the Rdy indicator at the bottom of the Tape Fwd/Rwd switch lights up. If the Rdy indicator is lit steadily, the tape has stopped in a read/write position; if this indicator flashes, the tape has stopped on clear leader.

- Rewind the tape by momentarily pressing upwards on the Tape Rwd/Fwd switch at the right end of the switch panel. The Rdy lamp will begin flashing when the tape has rewound.

- Move the tape to "load point" (that is, to the first recording location immediately following the clear leader) by momentarily pressing the spring-loaded Tape Off/On/Load switch down to the Load position. The Read lamp will begin flashing when the tape has rewound.

Note: You can abort any tape-moving operation by pressing the CLEAR key.

Begin transmitting tape data to the host computer. The transmission begins when:

- you hold down the CTRL key and type Q (X-ON) at the keyboard (ASCII Format only); or
- the host computer transmits an X-ON signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard.

During the transmission, the Tape - Read indicator is lit up steadily instead of flashing.

The Miniterm stops transmitting data when:

- all the data on the tape has been sent; or
- you hold down the CTRL key and type S (X-OFF) at the keyboard (ASCII Format only); or
- the host computer transmits an X-OFF signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard; or
- you set the Tape Off/On/Load switch to Off; or
- you set the Read/Edit/Write switch to either Edit or Write.

The end of the transmission is indicated when the Tape - Read indicator changes from steady to flashing, or goes out altogether.

RECEIVING DATA ONTO TAPE

Set-up the Miniterm to Receive data onto tape by setting the slide switches on the panel immediately above the keyboard as follows:

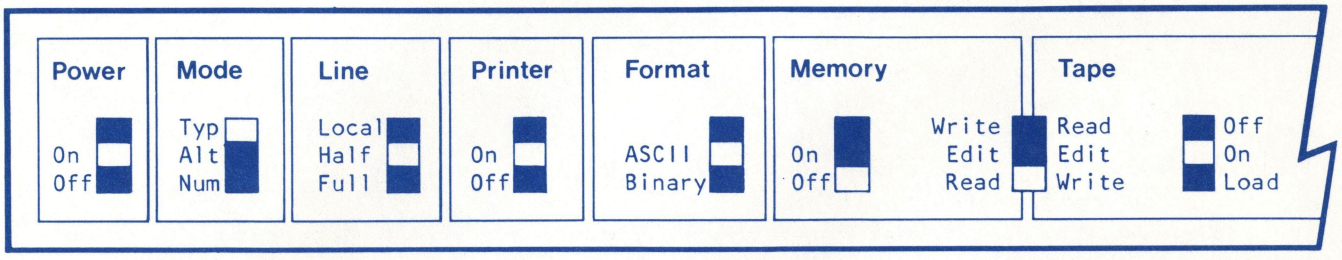


Figure 4-12. To use the Miniterm to receive data onto tape in the ASR mode, using a half-duplex line, set the switches as shown here; for a full-duplex line, set the Line switch to Full. Also, the Format switch is set to ASCII; it could be set to Binary.

When you have set the switches properly, the Write indicator next to the Tape side of the Write/Edit/Read switch begins to flash if the tape is advanced off clear leader.

Position the tape to the location where the data is to be written. The tape can be positioned as follows:

- Rewind the tape by momentarily pressing upwards on the Tape Rwd/Fwd switch at the right end of the switch panel; the tape-in-motion (< >) indicator at the top of the Tape Fwd/Rwd switch flashes as the tape moves to the required location. When the tape is rewound, this indicator goes out, and the Rdy indicator at the bottom of the Tape Fwd/Rwd switch begins to flash.

- Move the tape to the end of the last block of data by setting the Read/Edit/Write switch to Write Tape, then momentarily press the Tape Off/On/Load switch down to the Load position; the tape-in-motion indicator flashes as the tape moves to load point. When this indicator goes out, and the Tape Write indicator begins to flash again, reset the Read/Edit/Write switch to Edit; the Tape Rdy lamp lights steadily.

You can also use all the commands described on page 66 for transmitting data from tape.

Note: You can abort any tape-moving operation by pressing the CLEAR key.

Begin receiving tape data from the host computer. The reception begins when:

- you hold down the CTRL key and type R (TAPE) at the keyboard (ASCII Format only); or
- the host computer transmits a TAPE signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard.

During the reception, the Tape - Write indicator is lit up steadily instead of flashing.

The Miniterm stops receiving data when:

- you hold down the CTRL key and type T (TAPE-bar) at the keyboard (ASCII Format only); or
- the host computer transmits a TAPE-bar signal via the line (ASCII Format only); or
- you press the START/STOP key at the keyboard; or
- you set the Tape Off/On/Load switch to Off; or
- you set the Read/Edit/Write switch to either Edit or Read; or
- the tape reaches its end.

The end of the reception is indicated when the Tape - Write indicator changes from steady to flashing, or goes out altogether. If the Error indicator in the Format section of the switch panel begins flashing, the tape has reached its end.

TRANSMITTING TAPE DATA INTO MEMORY

Set-up the Miniterm to transmit data directly from tape to memory by setting the slide switches on the panel immediately above the keyboard as follows:

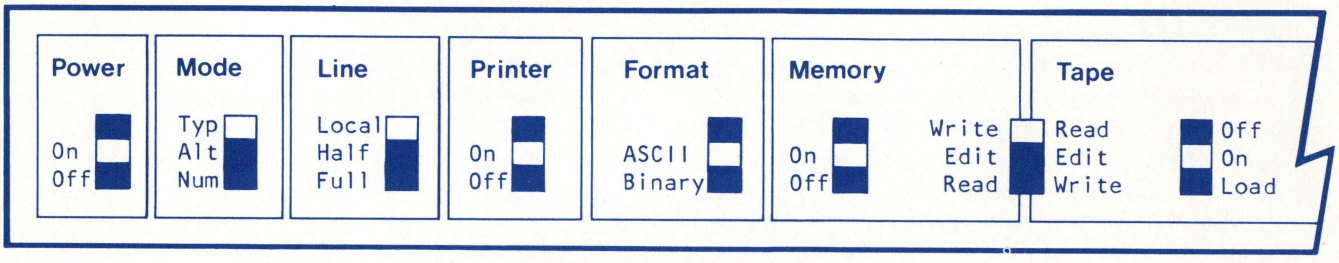


Figure 4-13. To use the Miniterm to transmit data directly from tape into memory, set the switches as shown here.

When you have set the switches properly, the Read indicator next to the Tape side of the Write/Edit/Read switch and the Write indicator next to the Memory side of the Write/Edit/Read switch both begin to flash.

Position the tape to the location where the data is to be read, using the commands described below. Note the action of the tape indicators: The tape-in-motion (< >) indicator at the top of the Tape Fwd/Rwd switch flashes while the tape is moving. When the tape stops, this indicator goes out, and the Rdy indicator at the bottom of the Tape Fwd/Rwd switch lights up. If the Rdy indicator is lit steadily, the tape has stopped in a read/write position; if this indicator flashes, the tape has stopped on clear leader.

- Rewind the tape by momentarily pressing upwards on the Tape Rwd/Fwd switch at the right end of the switch panel.
- Move the tape to "load point" (that is, to the first recording location immediately following the clear leader) by momentarily pressing the spring-loaded Tape Off/On/Load switch down to the Load position.

Note: You can abort any tape-moving operation by pressing the CLEAR key.

Specify where in memory the received data is to be stored. The beginning of the memory data is identified by an invisible "pointer", which can be moved from its initial position at the beginning of the first memory file to the required starting position. For receiving data, you will usually want to position the pointer to the end of the last file currently in the memory - in other words, to the beginning of a new file:

- Move the pointer forward to the end of the last file in memory by holding down the SHIFT and REPT keys and typing FWD for three seconds.

You can also use all the commands described on page 72 for transmitting data from the memory.

Begin transmitting tape data to memory. The transmission begins when you press the START/STOP key at the keyboard.

During the transmission, both the Tape - Read indicator and the Memory - Write indicator are lit up steadily instead of flashing.

The Miniterm stops transmitting data when:

- all the data on the tape has been sent; or
- you press the START/STOP key at the keyboard; or
- you set the Tape Off/On/Load switch to Off; or
- you set the Memory On/Off switch to Off; or
- you set the Read/Edit/Write switch to either Edit.

The end of the transmission is indicated when both the Tape - Read indicator and the Memory - Write indicator change from steady to flashing, or one of them goes out altogether.

TRANSMITTING MEMORY DATA ONTO TAPE

Set-up the Miniterm to transmit data directly from memory onto tape by setting the slide switches on the panel immediately above the keyboard as follows:

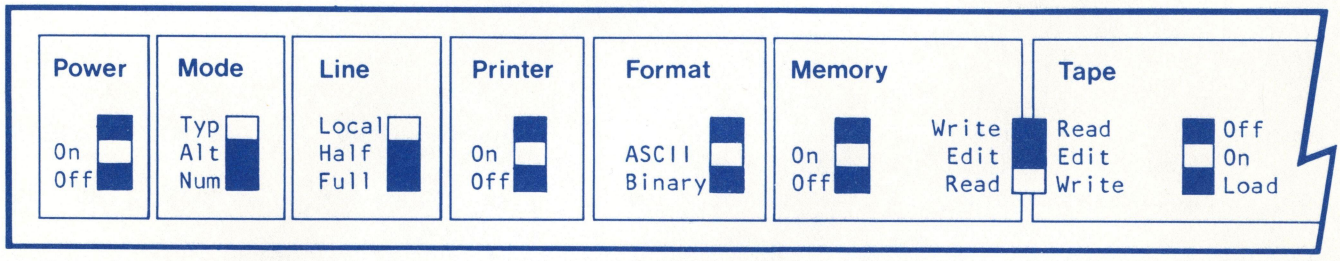


Figure 4-14. To use the Miniterm to transmit data directly from memory onto tape, set the switches as shown here.

When you have set the switches properly, the Write indicator next to the Tape side of the Write/Edit/Read switch and the Read indicator next to the Memory side of the Write/Edit/Read switch both begin to flash.

Specify where in memory the data transmission is to begin. The beginning of the memory data is identified by an invisible "pointer", which can be moved from its initial position at the beginning of the first memory file to the required starting position as follows:

- Move the pointer forward one character in the current file by pressing the FWD key. The character is printed for your reference.

- Move the pointer backward (in reverse) one character in the current file by pressing the REV key. The character is printed for your reference.

- Move the pointer forward to the first character in the next file in memory by holding down the SHIFT key and pressing the FWD key.

- Move the pointer backward (in reverse) to the first character in the previous file in memory by holding down the SHIFT key and pressing the REV key.

- Move the pointer backward (in reverse) to the beginning of the first file in memory by holding down both the SHIFT and REPT keys and pressing the REV key for three seconds.

You can use these commands in any order, as appropriate, to position the pointer to the exact position at which you want to start transmitting data.

Position the tape to the location where the data is to be written. The tape can be positioned as follows:

- Rewind the tape by momentarily pressing upwards on the Tape Rwd/Fwd switch at the right end of the switch panel; the tape-in-motion (< >) indicator at the top of the Tape Fwd/Rwd switch flashes as the tape moves to the required location. When the tape is rewound, this indicator goes out, and the Rdy indicator at the bottom of the Tape Fwd/Rwd switch begins to flash.

- Move the tape to the end of the last block of data by setting the Read/Edit/Write switch to Write Tape, then momentarily press the Tape Off/On/Load switch down to the Load position; the tape-in-motion indicator flashes as the tape moves to load point. When this indicator goes out, and the Tape Write indicator begins to flash again, the tape is positioned.

You can also use all the commands described on page 70 for transmitting data from tape.

Note: You can abort any tape-moving operation by pressing the CLEAR key.

Begin transmitting memory data to tape. The transmission begins when you press the START/STOP key at the keyboard.

During the transmission, both the Tape - Write indicator and the Memory - Read indicator are lit up steadily instead of flashing.

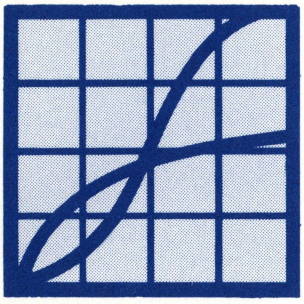
The Miniterm stops transmitting data when:

- all the data in the memory has been sent; or
- you press the START/STOP key at the keyboard; or
- you set the Tape Off/On/Load switch to Off; or
- you set the Memory On/Off switch to Off; or
- you set the Read/Edit/Write switch to Edit.

The end of the transmission is indicated when both the Tape - Write indicator and the Memory - Read indicator change from steady to flashing, or one of them goes out altogether.

LEAVING THE KSR/ASR MODE FOR ANOTHER OPERATIONAL MODE

When you no longer require the KSR/ASR mode, you can switch the Miniterm back to another mode. In fact, you must first switch the Miniterm back to the Editor mode, as described at the beginning of Section 2. From there you can switch to the BASIC interpreter or the DOS Executive, as described at the back of Section 2.



SECTION 5

USING THE OPTIONAL 80/132-COLUMN PRINTER/ PLOTTER

INTRODUCTION

The CDI 1206 Miniterm PRO can be equipped with an optional 80/132 column printer/plotter unit in place of the standard printer.

The standard printer prints a full character-set, with upper- and lower-case letters (actually large and small upper-case characters), numbers, punctuation marks, and the usual symbols such as & and @. This printer provides a single pitch (type size) of 10.4 characters/inch, which forms an 80-character column across the page. Figure 5-1 shows an example of the output of this printer.

The optional unit provides the same character-set, but in dual pitches: the same 10.4 characters/inch, 80 characters/column; and 16.3 characters/inch, which provides 132 characters/column. Figure 5-2 shows an example of the 132-column output of this printer; the 80-column output is the same as that of the standard printer shown in Figure 5-1.

The optional unit is also a plotter, capable of plotting graphs and diagrams under software control. Plots are printed using a dot-matrix of 57.1 dots/inch horizontally, and 38.4 dots/inch vertically. Figure 5-3 shows an example of this type of output.

The pitch of the printer can be controlled in either of two ways: by a manual switch under the top cover of the Miniterm, or by software from the keyboard or from a program. The plotter is completely controlled by software.

	EXPECTED 1980	1979	1978
MANUFACTURERS	$ 9,975,110	$ 9,528,060	$ 8,811,330
SERVICE	2,147,900	2,039,530	1,898,180
WHOLESALE	678,520	611,280	550,700

Figure 5-1. An example of an 80-column printout. The 80-column printout produced by the optional 80/132 column printer/plotter is identical to the printout produced by the standard 80-column printer.

	EXPECTED 1980	1979	1978	1977	1976
MANUFACTURERS	$ 9,975,110	$ 9,528,060	$ 8,811,330	$ 8,223,160	$ 7,650,450
SERVICE	2,147,900	2,039,530	1,898,180	1,740,740	1,608,530
WHOLESALE	678,520	611,280	550,700	503,160	487,570

Figure 5-2. An example of a 132-column printout.

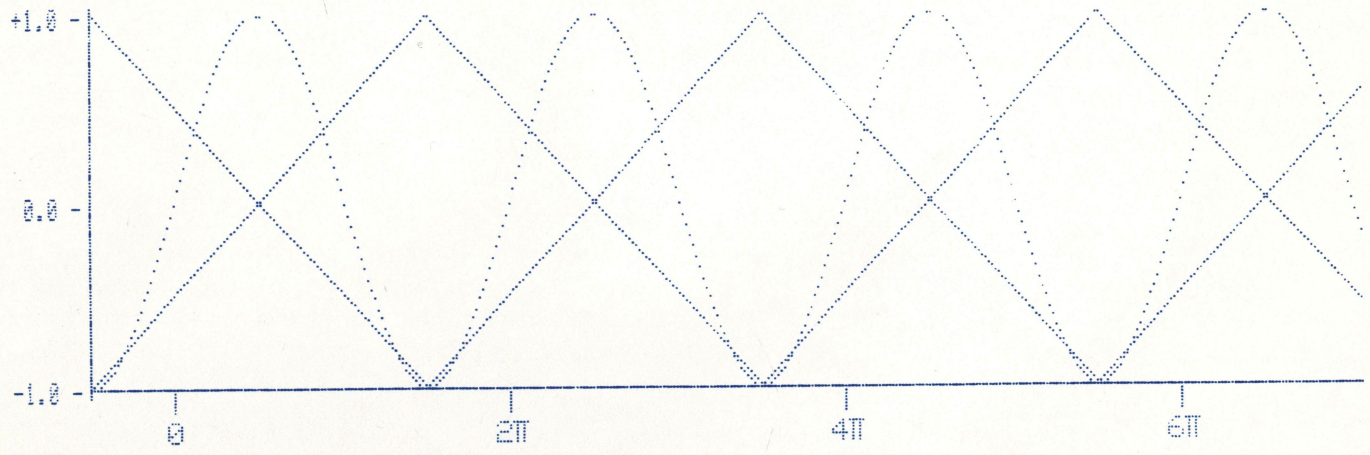


Figure 5-3. An example of a plotted printout.

USING THE DUAL-PITCH PRINTER

SETTING THE PITCH

The pitch of the dual-pitch printer is controlled by a switch under the top cover of the Miniterm. This switch has three positions:

- In the rear position, this switch selects the 80-column format. The red scale immediately under the printer paper applies in this format.
- In the front position, this switch selects the 132-column format. The black scale immediately under the printer paper applies in this format.
- In the center position, this switch puts the pitch under software control ("code select").

When the printer is in the code select mode, it assumes the 132-column pitch when the Miniterm is powered-up. However, you can change this through the keyboard:

- To switch to 80-column format, press the ESC key, then hold down the CTRL key and type A.
- To switch to 132-column format, press the ESC key, then hold down the CTRL key and type B.

Do not change the pitch when the printer is printing: if you do the characters may not be spaced correctly.

AUTOMATIC UNCOVER (132-COLUMN ONLY)

Each time a character is printed, the print-head automatically moves on to the position of the next character. When the printer is operating in the 80-column pitch, the print-head moves over far enough to uncover the character just printed, so you can read every character immediately.

However, when the printer is operating in the 132-column pitch, the print-head does not move over far enough to uncover the character just printed. This is a disadvantage when you are entering text or commands one character at a time. This disadvantage is overcome, however: when you type a single character, the printer waits a fraction of a second, then moves the print-head over farther than is necessary; this uncovers the character just typed. When you type another character, the print-head automatically moves back to the correct position to print the next character.

UNDERSCORING

The dual-pitch printer is usually very fast: it types 38 characters/second in the 80-column mode, and 45 characters/second in the 132-column mode. However, when the printer underscores the letters as it prints, these printing rates are significantly reduced, because underscoring each character is like printing a duplicate set of characters. This loss of printing speed is sometimes undesirable.

To overcome this disadvantage, the printer offers a "pseudo" underscoring mode. In this mode, each individual printed character incorporates an underscore. This is, in effect, an entire duplicate character-set. Pseudo-underscoring does not slow down the printing rate at all: printing occurs at full normal speed.

When the Miniterm is powered-up, it assumes the pseudo-underscoring mode. However, you can change this through the keyboard:

- To switch to true underscoring, press the ESC key, then hold down the SHIFT key and type L.
- To switch to pseudo-underscoring, press the ESC key, then hold down the SHIFT key and type O.

PLOTTING

Plotting is controlled entirely by software. Plots may be printed by BASIC programs provided by your company for use on the Miniterm. When a plot is required, it will occur automatically as far as you are concerned. However, the printer must be set to the "code select" mode.

SECTION 6

USING THE OPTIONAL BAR-CODE READER

INTRODUCTION

The CDI 1206 Miniterm PRO can be equipped with a Bar-code Reader that enables it to read information in Code 39 bar codes (see Figure 6-1). The Bar-code Reader makes it especially easy to enter data from, for example, inventory stock; it also ensures accuracy in entering this data.

The Miniterm must be programmed to read the coded data, and to incorporate it into a BASIC program. When the Miniterm has been programmed in this way, you read a coded label simply by passing the Reader over it when the program tells you to do so.

Figure 6-1. An example label in Code 39, which can be read directly by the Miniterm via the optional Bar-code Reader.

CONNECTING THE BAR-CODE READER

The Bar-code Reader is a small wand, with an attached coiled cord that terminates in a connector (see Figure 6-2).

WARNING

Do not connect or disconnect the Bar-code Reader while the Miniterm is powered-up. To be safe, unplug the Miniterm from the power line before connecting or disconnecting the Reader.

To connect the Reader, simply plug the cord into the mating connector on the rear panel of the Miniterm. Note that the connectors will mate only if they are oriented correctly; when the connector is plugged in all the way, rotate it clockwise to lock it in position.

Figure 6-2. The Bar-code Reader consists of a small wand, with an attached coiled cord that terminates in a connector.

PROGRAMMING THE BAR-CODE READER

A BASIC program can be written to take data from the Reader in much the same way that data can be taken from the keyboard, the tape, etc. (For complete details, see the 1206 Programming Manual.)

Like any other input device, the Reader must be "opened" before it can be read. The Reader is identified by the name "ACIA". Here is an example of part of a BASIC program that opens the Reader, assigns a file, and takes in the data from a label:

```
ØØ1Ø OPEN #1,ACIA
ØØ2Ø INPUT #1,A$
ØØ3Ø PRINT A$
ØØ4Ø GOTO 2Ø
```

The status of the Reader is indicated by status flag STAT(14): if this flag is 1, the Reader is attached and is ready to be opened for use.

Note that the buffer in the Miniterm can store up to seven standard Code 39 labels, each with up to 28 characters. If you need to read more than seven labels, you must arrange to move some of the data on - by printing the data, recording it on tape, etc. The status of the buffer is indicated by the status flag STAT(15): if this flag is non-zero, the buffer is full.

The Reader is closed in the same way as any other input device - by closing the associated file. To close the file (and the Reader) opened in the example above:

```
ØØ5Ø CLOSE #1
```

USING THE BAR-CODE READER

When you power-up the Miniterm with a Bar-code Reader attached, it begins by verifying the operation of the Reader. As a result, it types out a message such as:

```
VER BAR 1(6.01) OK
```

The final part of the message, "OK", indicates that the Miniterm and the Reader are both working. If there is a problem with the Reader, this message takes a different form, and is followed by the message:

```
READER ERROR
```

Note: You will also get this message if the Reader is not connected. If you do not wish to use the reader at this time, this is acceptable.

When the Miniterm has been programmed appropriately, you read a coded label simply by passing the Reader over it when the program tells you to.

In reading a label, try to hold the Reader at right-angles to the label, rather than holding like a pen. The Reader will work within about 30 degrees either side of the ideal angle. You can move the Reader across the label as fast as you like, as long as it remains in contact with the label all the time. You can also start from outside either end of the label.

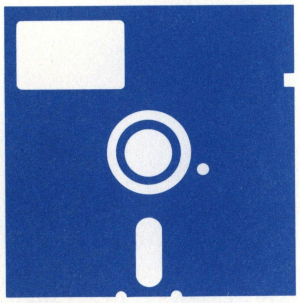
The Miniterm rings its bell to tell you when it has read the label correctly.

POSSIBLE PROBLEMS

- Problem: You try to read the label repeatedly, but cannot get the bell to ring.
- Solution 1: You may be holding the Reader at the wrong angle.
- Solution 2: The Reader is not connected properly. See above, "Connecting the Bar-code Reader".
- Solution 3: The bar-code you are trying to read is not in Code 39.

- Problem: When you try to read a label, the Miniterm prints the message "**10 ERROR ON FILE #1 IN LINE 0000 108 FILE NOT OPEN ERROR # 35 IN LINE 0000".
- Solution: There is an error in the program, and the Reader has not been opened. The program must be corrected.

- Problem: You have read several labels successfully, but now the Miniterm will not read any more.
- Solution: There is an error in the program, and the label buffer has filled up. The program must be corrected.
- Solution: The label is defective. For example, the wand may not read a label that is copied on an office copier.



SECTION 7

USING THE OPTIONAL DISK OPERATING SYSTEM (DOS)

INTRODUCTION

The CDI 1206 Miniterm PRO can be equipped with up to four disk-drives for mini-floppy ($5\frac{1}{4}$") diskettes, as shown in Figure 7-1. Each diskette is double-sided, and stores up to 360K characters. So when all four diskettes are used, the system has a total capacity for 1.44M characters.

When the Miniterm is equipped with disk-drives, it is also provided with a control program called the Disk Operating System (DOS) Executive. The primary function of the DOS Executive (from your point of view as a Miniterm user) is to manage disk files in various ways; however, the DOS Executive also provides several other functions that you will find useful from time to time.

Figure 7-1. A Miniterm 1206/DOS equipped with 2 minifloppy disk-drives. These drives provide the Miniterm with storage for up to 360K characters each. The associated DOS executive provides powerful file management capabilities.

INSTALLING THE DISK-DRIVES

When a Miniterm is equipped with disk-drives, the disk-drives should be installed adjacent to it as shown in Figure 7-1.

If there is more than one drive, you may wish to stack the drives on top of one another: they are designed to fit together securely. However, do not stack the drives until the cables have been connected.

WARNINGS

- Disconnect the Miniterm from the power line before installing the disk-drives.
- The disk-drives should be placed to the right of the Miniterm, as shown in Figure 7-1, not to the left. The left side of the Miniterm contains a power supply that may interfere with the operation of the disks.

INSTALLING A SINGLE DISK-DRIVE

If there is only one disk-drive, a single cable is used to connect it to the Miniterm. This cable is equipped with a male connector at one end, and a female connector at the other end. The male end of this cable plugs into the corresponding female connector on the rear of the Miniterm; the female end of this cable plugs into the corresponding male connector on the disk-drive. See Figure 7-2 for details.

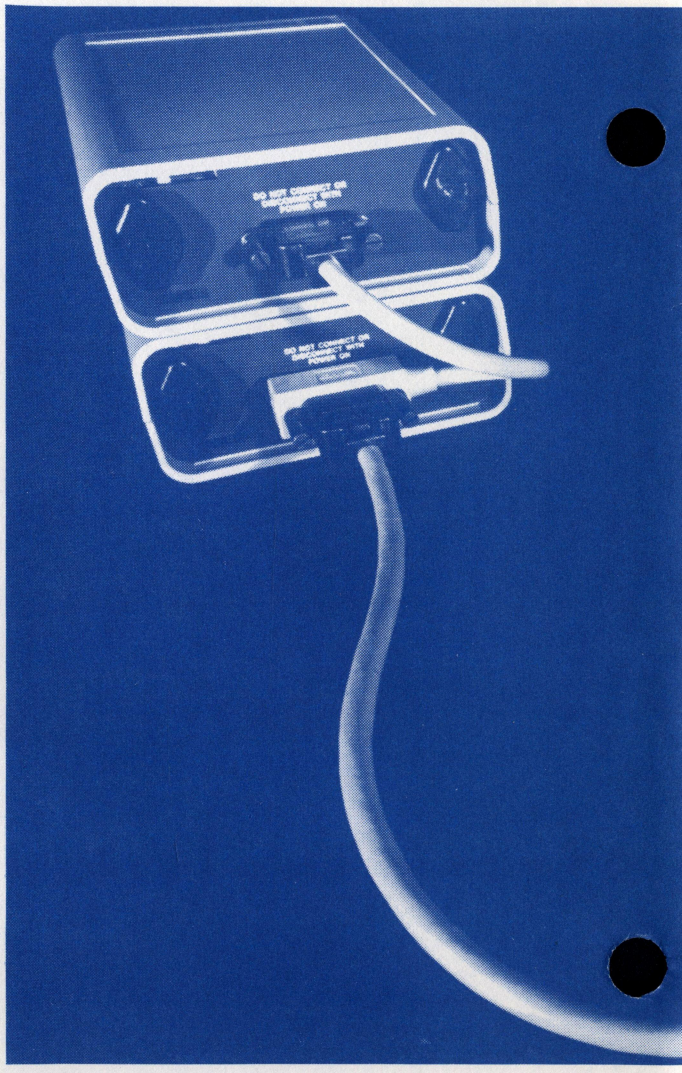
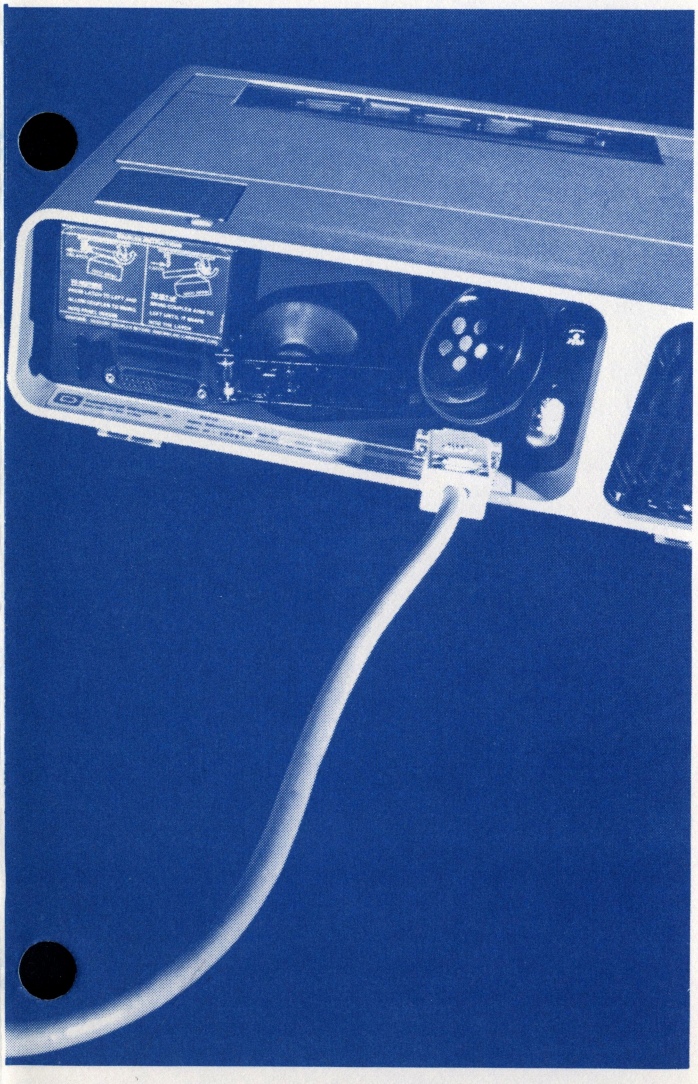


Figure 7-2. The male end of the disk-drive cable plugs into the rear of the Miniterm; the female end of this cable plugs into the drive. ——→

INSTALLING MULTIPLE DISK-DRIVES

The disk-drives are connected to the Miniterm in a chain, as shown in Figure 7-2. Two types of cable are used:

- The cable connecting the Miniterm to the first drive has a male connector at the Miniterm end, and a female connector at the drive end.
- A cable connecting each drive to the next drive has a male connector at the end farthest from the Miniterm, and a back-to-back male-female connector at the end nearest to the Miniterm.



SETTING-UP THE DISK-DRIVES

After you have installed all the cables, you can stack-up the drives on top of each other if you wish.

The last step of the installation involves assigning numbers to the drives. There is a four-position (0/1/2/3) slide switch in the lower left corner of the back panel of each drive: set it to the number you wish to assign to this unit.

WARNINGS

- Make sure one of the drives is set to position Ø. This will be the system drive, and will be used for the DOS diskette.
- Make sure no two disk-drives are set to the same number.
- Make sure that the disk-drives are on the right of the Miniterm, not on the left.

USING THE DISKETTES

The disk-drives use 5¼"-diameter mini-floppy diskettes, as shown in Figure 7-3. Each diskette is sealed within a square envelope: the entire package goes into the disk-drive, and the diskette rotates within its envelope. The diskette comes in a protective sleeve, and should be kept in this sleeve whenever it is not in a drive.

The surfaces of the diskette are magnetic; as the diskette rotates within its envelope, a read/write head accesses one surface of the diskette through the slot in the envelope.

For security reasons, it is possible to protect a disk that contains important data from being re-written. This is accomplished by a "write protect" notch in the side of the envelope (see Figure 7-3). The diskette can be write-protected by placing an adhesive tab over the notch; adhesive tabs are provided with diskettes for this purpose.

Figure 7-3. A minifloppy diskette, showing the slot in the envelope through which the disk-drive accesses the magnetic surface, and showing the write protect notch.

PRECAUTIONS IN USING DISKETTES

To ensure that you do not damage the data on a diskette, always observe the following rules:

- *Do not* touch the surface of a diskette where it is exposed through the slot in the envelope.
- *Do not* expose a diskette to temperatures above 125F (50C) or below 50F (10C), nor to bright sunlight.
- *Do not* place heavy objects on a diskette.
- *Do not* use a ball-point pen or a pencil to write on the envelope. Use a felt-tip pen, and do not press hard.
- *Do not* bend or fold a diskette.
- *Do not* try to clean a diskette. If it seems dirty, discard it.
- *Do not* use paper-clips or rubber bands on a diskette.
- *Do not* leave a diskette in the drive when it is not being used. In particular, do not move a drive with a diskette in place.
- *Do* store diskettes in a clean area that is free of magnetic fields.
- *Do* keep a diskette in its protective sleeve when it is not in the drive.
- *Do* keep the diskette at the same temperature and humidity as the drive for at least five minutes before putting it into the drive.
- *Do* handle the disk carefully and gently when putting it into the drive and when taking it out.

UNLOADING A DISKETTE FROM THE DRIVE

The procedure for unloading a diskette from the disk-drive is as follows:

1 Open the door of the disk-drive by pressing firmly at the center of the top edge of the door. When you release the door, it falls open as shown in Figure 7-4.

WARNING

Never open the door when the red light in the bottom right corner is lit.

2 As the door opens, the diskette inside slides out an inch or so. Grasp a corner of the envelope gently, and pull the diskette out all the way.

3 Immediately store the diskette in its protective sleeve, with the slot in the envelope protected in the bottom of the sleeve.

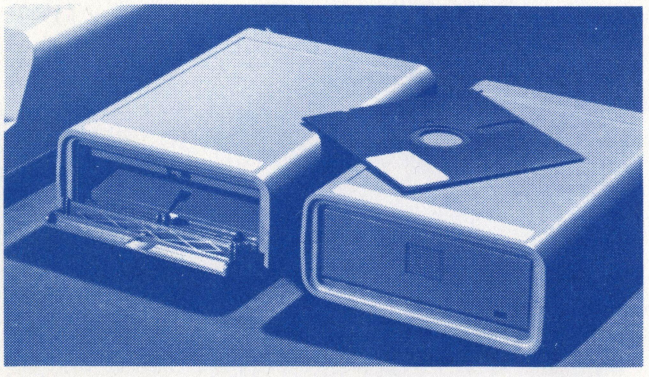


Figure 7-4. Open the door on a disk-drive by pressing the center of the door at the top, then releasing it. The door falls open, and the diskette slides part-way out.

LOADING A DISKETTE INTO THE DRIVE

Before loading a new diskette, remove any diskette that is already in the drive. The procedure for loading a diskette into the disk-drive is as follows:

1 If the door of the disk-drive is not already open, open it by pressing firmly at the center of the top edge of the door. When you release the door, it falls open as shown in Figure 7-4.

2 Slide the new diskette into the slot in the drive, and push it gently all the way in until it latches in place. You must orient the diskette correctly: the write protect notch should be at the back (nearest you) right corner.

3 Close the door of the disk drive by pressing it up into place until it latches.

THE DOS EXECUTIVE: GENERAL OPERATION

The DOS Executive is controlled from the Miniterm keyboard using commands that are simply typed words. For example, the command "DIRECTORY" tells the DOS Executive to print a directory of disk files. The Executive tells you it is ready to receive a command by printing a period (.) as a prompt.

To enter a command, respond to the prompt by typing the appropriate command word followed by RETURN. For example, to get a directory you type:

DIRECTORY (RETURN)

To make it easier for yourself, you can type as few as the first three letters of the command name:

DIR (RETURN)

RESIDENT AND TRANSIENT COMMANDS

The DOS Executive makes use of two types of command: "resident" and "transient".

Resident commands control operations that you want to use often. They are executed by software that lives in the Miniterm, so they are always available, and are executed instantly.

Transient commands control operations that you want to use less frequently. They are executed by software that resides on the DOS disk: this saves valuable memory space in the Miniterm, but it means that there is a slight delay when they are executed, because the software must be loaded into the Miniterm memory before it can be used. Before you can use a transient command, therefore, you must be sure that the DOS disk is in drive Ø.

When you call for a transient command, the Executive loads the appropriate software into a temporary area of memory.

In the remainder of this section, as each command is described, your attention will be drawn to the commands that are transient.

FILE MANAGEMENT USING THE DOS EXECUTIVE

File management refers to the manipulation of files of data that are recorded on diskettes. File management includes the operations listed in the following index:

92 Initializing a new diskette to receive files
93 Listing a directory of the files on a diskette
94 "Backing-up" (copying) a diskette onto another diskette for security reasons
94 Controlling access to a file
95 Deleting a file
95 Renaming a file
96 Renaming a diskette
96 Media conversion (PIP) operations

Filenames for disk files The filenames used for disk files can be different from the filenames used for memory and tape files. You will recall that a filename for a memory or tape file consists of a single block of up to eight alphanumeric characters, with no punctuation marks. The filename for a disk file also consists of a name of up to eight alphanumeric characters, followed by a period (.), then an "extension" of three more alphanumeric characters. The filename should also be prefixed by the number of the disk-drive, followed by a colon (:); if you do not specify a drive number, the system will assume you mean drive Ø. For example, a disk filename might be:

```
                2:AHF37B.X12
               /    |     \
drive number  /     |      \
             name          extension
```

Note that both the name and the extension must begin with an alphabetic character (not a numeral).

Handling groups of related files In managing files, you wish to handle several related files in a similar way. You can do this easily if you have chosen your file names and extensions carefully. When you specify a filename as part of a command to the DOS Executive, you can usually replace some of the characters in the filename with "wildcards". For example, if you specify the name as:

```
AHF37B.???
```

the Executive will manipulate all files whose names begin "AHF37B", regardless of their individual extensions. In other words, the symbol "?" is a wildcard that matches any alphanumeric character.

You can simplify this even further: the symbol "*" is a wildcard that replaces an entire name or extension. Thus the filename

```
*.X12
```

matches any filename that includes the extension "X12".

If you wanted to match any filename at all, you could use

```
*.*
```

Using Drive Ø Most DOS commands require you to specify the number of the disk-drive to be operated on. If your system has only one drive (drive Ø), it is irritating to have to keep entering this number unnecessarily. To save you this bother, the Executive allows you to omit the drive number from a command: in this case it assumes you refer to drive Ø.

For example, the standard format of a directory command is:

DIR_(drive) (RETURN)

Note that there must always be a space (_) between the command and the drive number.

For example:

DIR 2 (RETURN)

However, if you want a directory for the disk in drive Ø, you need type only:

DIR (RETURN)

INITIALIZING A DISKETTE TO RECEIVE FILES

When you get a new, unused diskette, you must "initialize" it before you can record any files onto it.

Note: Initialize is a transient command. The DOS diskette must be in drive Ø before this command is typed.

To initialize a diskette, type the command:

INIT_(drive) (RETURN)

The Executive echoes this command to verify it: "INIT. DISK IN DRIVEx?" (where "x" is actually the drive number you specified). If you have only one disk-drive, replace the DOS diskette with the diskette you wish to initialize. Confirm the command by typing Y. (Alternatively, you can abort the command at this point by typing N.)

If the diskette you loaded is double-sided, the Executive goes on to ask: "INIT. DISK AS SINGLE SIDED?" Usually you will respond N, because you want to initialize both sides. If however you wish to initialize only one side of the diskette at this time, you can type Y.

The Executive then goes on to ask for a name for this disk: "DISK NAME?" Respond by typing a name of up to six alphanumeric characters, followed by a RETURN. If you do not want to name the disk, type just a RETURN.

The initialization now begins. It takes about three minutes to initialize a single-sided diskette, and about six minutes to initialize a double-sided diskette. The initialization is complete when the Executive types the message "INITIALIZATION COMPLETE" followed by a new period prompt.

LISTING THE FILES ON A DISK

You can obtain printed listings of the files on the disks by using "directory" commands. Each directory listing also tells you a great deal about the file:

- filename:
  8-character name plus 3-character extension
- file type:
  ØØ for a binary file
  Ø1 for a binary file with a transfer address
  Ø3 for a text (hexadecimal) file
- access code:
  ØØ can be renamed or deleted
  Ø1 can be renamed, but not deleted
  Ø2 cannot be renamed or deleted
- first track/sector:
  hexadecimal addresses
- last track/sector:
  hexadecimal addresses
- sector count:
  total (decimal) number of sectors used for this file

At the end of the directly listing, the Executive prints the total (decimal) number of sectors that remain unused on the diskette.

An example directory printout is shown in Figure 7-5.

Figure 7-5. An example of a directory printout.

```
DIRECTORY OF DRIVE Ø      DISK = S8Ø6Ø6
    NAME        T   A   FT-FS   LT-LS   NS
CDIDOS4 .SYS   Ø1  Ø2   Ø1 Ø1   Ø2 ØF  ØØØ33
BAS     .SYS   Ø1  Ø2   Ø2 1Ø   Ø3 ØE  ØØØ17
CREATE  .SYS   Ø1  Ø2   Ø3 ØF   Ø3 11  ØØØØ3
EXPAND  .SYS   Ø1  Ø2   Ø3 12   Ø4 Ø3  ØØØØ4
EDITCOM .SYS   Ø1  Ø2   Ø4 Ø4   Ø4 Ø6  ØØØØ3
INIT    .CMD   Ø1  Ø2   Ø4 Ø7   Ø4 Ø9  ØØØØ3
STATUS  .CMD   Ø1  Ø2   Ø4 ØA   Ø4 ØA  ØØØØ1
SET     .CMD   Ø1  Ø2   Ø4 ØB   Ø4 ØC  ØØØØ2
ASSIGN  .CMD   Ø1  Ø2   Ø4 ØD   Ø4 ØE  ØØØØ2
LINK    .CMD   Ø1  Ø2   Ø4 ØF   Ø4 1Ø  ØØØØ2
SECURITY.CMD   Ø1  Ø2   Ø4 11   Ø4 12  ØØØØ2
DELETE  .CMD   Ø1  Ø2   Ø5 Ø1   Ø5 Ø3  ØØØØ3
```

There are several levels of directory command:

All Files on a Diskette To list all the files on a diskette, include the number of the drive in the command:

DIRECTORY_(drive) (RETURN)

or just:

DIR_(drive) (RETURN)

For example:

DIR 1 (RETURN)

One File Only To list the directory data for just one specific file, include the drive number and the filename, separated by a colon:

DIR_(drive):(filename) (RETURN)

For example:

DIR 1:AHF37B.X12 (RETURN)

A Class of Files To list the directory data for a class of files, use wild cards in the filename. For example, to list all files that use extension X12:

DIR 1:*.X12 (RETURN)

BACKING-UP A DISKETTE

Backing-up a diskette makes an identical copy of the entire contents of the diskette on another diskette. Because backing-up makes an identical copy in all respects, the new disk need not be initialized before you use it. Backing-up diskettes is a useful security measure: if the primary diskette is ever damaged, you will have a spare copy. However, you must have two (or more) disk-drives in order to back-up a disk, and you must use two identical diskettes (that is, both single-sided, or both double-sided).

Note: Backup is a transient command. The DOS diskette must be in drive Ø before this command is typed.

The format of a backup command is:

BACKUP (RETURN)

The Executive asks "BACKUP FROM DRIVE": respond by typing the number of the drive containing the diskette to be copied. If necessary, load the diskette into the drive at this time.

The Executive then asks "BACKUP TO DRIVE": respond by typing the number of the drive containing the diskette to receive the copy. If necessary, load the diskette into the drive at this time.

The Executive then verifies the operation by asking "BACKUP FROM DRIVE x TO DRIVE y?", where "x" and "y" are actually the drive numbers you specified. Confirm the operation by typing a Y. (Alternatively, you can abort the command at this point by typing N.)

It takes about 3½ minutes to back-up a single-sided diskette, and about 7 minutes to back-up a double-sided diskette. When the process is complete, the system types "BACKUP COMPLETE".

CONTROLLING THE SECURITY OF A FILE

The security of each file on a disk is controlled by an access code within that file. A file may have one of three security levels, indicated by the following codes:

ØØ Minimum security: the file can be renamed or deleted.
Ø1 Limited security: the file can be renamed, but not deleted.
Ø2 Maximum security: the file cannot be renamed or deleted.

You can set the access code that specifies the security level of a file by using a security command.

Note: Security is a transient command. The DOS diskette must be in drive Ø before this command is typed.

The format of a security command is:

SEC_(drive):(filename),(code)(RETURN)

For example, to specify a maximum security level (Ø2) for the file named AHF37B.X12 in drive 1, you would type the command:

SEC 1:AHF37B.X12,Ø2 (RETURN)

Note that you cannot use wildcards in the filename with a security command.

DELETING A FILE FROM A DISKETTE

When you no longer need a particular file, you can delete it from the diskette. By using wildcards in the filename, you can also delete groups of related files.

Note: Delete is a transient command. The DOS diskette must be in drive Ø before you type this command.

The format of a delete command is:

DEL_(drive):(filename) (RETURN)

For example, to delete file AHF37B.X12 from disk 1, you type the command:

DEL 1:AHF37B.X12 (RETURN)

The Executive always verifies the operation by asking (for example) "DELETE -1:AHF37B.X12 ?". You confirm the command by typing Y. (Alternatively, you can abort the command by typing N.)

A Class of Files To delete a whole class of files with related names, use wild cards in the filename. For example, to delete all files from disk 1 that use extension X12:

DEL 1:*.X12 (RETURN)

Note that before it deletes each individual file, the Executive prints a verification question, as shown in the example above: by responding Y or N each time, you can delete the files selectively.

To exit from the delete utility and return to the standard Executive control, press the ESC key.

RENAMING A FILE

Occasionally you may wish to give a file a new name without changing the data it contains. For example, you may generate a new file by copying an old file (name and data) and modifying the data slightly; you then need to give this new file a new name. You can do this using a rename command.

The format of a rename command is:

RENAME_(drive):(old)_(new)(RETURN)

where "old" and "new" are filenames. Note that you cannot use wildcards in either of these filenames.

RENAMING A DISKETTE

Occasionally you may wish to give an entire diskette a new name without changing any of the files it contains. You can do this using a namedisk command.

Note: Namedisk is a transient command. The DOS diskette must be in drive Ø before you type this command.

The format of a namedisk command is:

NAMEDISK (RETURN)

This Executive responds by asking "DRIVE", to which you answer by typing the number of the drive containing the disk whose name is to be changed.

The Executive then asks for the new name: "DISK NAME", and you enter that name. Note that the disk name may consist of up to six characters; the first character must be alphabetic, and the remaining five must be alphanumeric.

MEDIA CONVERSION OPERATIONS

A whole group of operations that move files around between different media can be controlled via a subset of commands that are collectively referred to as the Peripheral Interchange Program (PIP).

There is essentially only one PIP command, but it is so flexible in its format that it may seem like several different (although related) commands. The general format of a PIP command is:

PIP (destination) = (source)

This PIP command tells the Executive to move data to the "destination" from the "source". The destination and the source may be specified in terms of disk-drives and filenames, in which case you are simply moving a file from one diskette to another. However, the destination or source may be an I/O channel on the Miniterm, such as the printer or the external line. PIP also allows you to perform such operations as combining several existing files into one new, large file.

The following text explains some of the more common PIP operations. As you become familiar with the Miniterm and the DOS Executive, you may think of other ways to use PIP.

Note: The PIP command is transient. The DOS diskette must be in drive Ø before you type this command.

Copying a file one disk to another Perhaps the most basic PIP operation is to copy a file from one diskette onto another diskette. The format of this command is:

PIP_(drive)=(drive):(filename) (RETURN)

Here the destination is specified simply as a drive number; the source is specified as a particular filename in a particular drive number. You may use wildcards in the filename in order to copy several related files.

As usual, the Executive verifies each operation by echoing the details: "COPY AHF37B.X12 FROM DRIVE1 TO DRIVEØ?", which you confirm by typing Y, or override by typing N.

Note that whenever you copy a file using PIP, the copy is set to unrestricted access (access code ØØ).

Duplicating an entire disk A variant on the above command can be used to copy the entire contents of one diskette onto another diskette. Note that this is not the same as a backing-up a diskette: when you back-up, the copy deletes whatever data was already on the second disk. When you copy a diskette using PIP, the contents of the first disk are added to whatever is already on the second disk. Even if there are no files on the destination disk already, that disk must have been initialized.

The command is simple:

PIP_(drive)=(drive) (RETURN)

As usual, the Executive verifies the command: "COPY FROM DRIVE1 TO DRIVEØ?", and you respond Y or N.

Combining several files into a new, large file You can combine several existing files into a new, large file by using a variation of the basic copy command described above. Once again, the new file is added to whatever files are already on the destination disk.

In this case you must specify several source files. For example, the format for combining three files is:

PIP_(drive)=(drive):(filename),

(drive):(filename),

(drive):(filename) (RETURN)

You can combine any number of files in this way.

Transferring data between devices PIP can be used to transfer data between any two devices on the Miniterm system. These devices are defined as follows:

CON The Miniterm console, that is, the keyboard and printer.
LIN The RS232C line from the Miniterm to an external system such as a host computer.
DSK The disk-drives.
LPT An optional line printer.
NUL A "null" device, sometimes referred to as a "bit bucket". This ficticious device may be used for testing purposes.

To transfer data from a disk file into one of these devices you use a command in the format:

PIP_(device)=(drive):(filename) (RETURN)

You can also transfer data into a disk file from one of these devices. For example, this command:

PIP 1:AHF.A1=CON (RETURN)

enters text from the keyboard (CON) into file AHF.A1 in disk-drive 1.

By reversing this command, you could print out the contents of a disk file.

Translating data formats In the course of transferring data from one location to another, PIP can translate it either way between binary (system) format and hexadecimal (user) format. To obtain a translation, you specify the format of the destination by adding "/H" (for hexadecimal) or "/B" (for binary). For example, to translate the destination to binary you might type the command:

PIP 1:AHF.BIN/B=AHF.HEX (RETURN)

To exit from the PIP utility and return to the standard Executive control, press the ESC key.

OTHER OPERATIONS USING THE DOS EXECUTIVE

The DOS Executive provides a number of commands for operations other than file management. A few of these you may need occasionally; most of them, however, are primarily useful in developing system programs, and you will rarely, if ever, need them.

LEAVING THE EXECUTIVE FOR ANOTHER MODE

You entered the DOS Executive from either the Editor or the BASIC Interpreter. When you have finished with the Executive, you can return to the mode you came from simply by typing an exit command:

EXIT (RETURN)

See Section 2 for details of using the Editor mode, and Section 3 for details of using the BASIC Interpreter mode.

ASSIGNING DEVICES (I/O CHANNELS)

The Miniterm is equipped with several "devices" that function as input/output channels, as follows:

CON The Miniterm console, that is, the keyboard and printer.
LIN The RS232C line from the Miniterm to a host computer.
DSK The disk-drives.
LPT An optional line printer.
NUL A "null" device, sometimes referred to as a "bit bucket", used for testing purposes.

Programs for the Miniterm are written in terms of these devices. For example, a program may specify that a particular block of data is to be output on the printer (CON).

But occasionally you may wish to handle certain data differently. For example, you may decide that instead of printing-out certain data, you want to transmit it over the line to the host computer. The assign command allows you to re-assign the device names temporarily: the program remains unchanged. Subsequently, the devices can be re-assigned back to their original names, either by another assign command, or by re-loading the program.

The assign command has the format:

ASS_(device)=(device) (RETURN)

So to assign the CON data to the LIN device, you would type the command:

ASS CON=LIN (RETURN)

WARNING

The device assigned to the CON device must be capable if inputting new commands.

CHECKING THE STATUS OF THE DEVICES

Because devices can be re-assigned by assign commands, you may occasionally need to find what assignments are currently in effect. You can do this by using a status command.

Note: Status is a transient command. The DOS diskette must be in drive Ø before you type this command.

The status command is simple:

STATUS (RETURN)

The Miniterm responds by typing out the current assignment statuses. If everything is normal, this list is:

LPT = LPT
DSK = DSK
NUL = NUL
LIN = LIN
CON = CON

PROGRAMMING A SERIES OF COMMANDS

You may find that you frequently use a particular sequence of commands. If this sequence is fairly lengthy, you may get tired of the repetition; you may also make mistakes. You can simply this by writing a special "submit" file.

A submit file is similar to an ordinary data file, but it consists entirely of Executive commands. Each command appears as one line in the file. You can even add some flexibility to the file, by indicating that a manual command must be inserted at some point: simply substitute an ampersand ("&") for a command.

You can create this file using the Editor, or using PIP. Assign the file a filename in the usual way.

When you want to execute the sequence of commands in this submit file, you just type a single sumbit command, as follows:

SUBMIT_(drive):(filename) (RETURN)

The Miniterm executes this command by retrieving the submit file, and executing all the commands in sequence. When the entire file has been executed, you get the usual Executive prompt again.

LOADING A PROGRAM

The DOS Executive is a system program. But it is not the only system program that can be used: you can develop programs of your own. When you do, you use the load command to load those programs into the Miniterm for use. Note that the load command only loads a program: it does not run it. After the program has been loaded, the Miniterm remains under the control of the DOS Executive.

In giving a load command you must specify the disk-drive to load from, the filename of the program to be loaded, and the starting address in memory where the program is to be stored. Note also that the program must be a binary file. The format of a load command is:

LOAD_(drive):(file),(address)(RETURN)

No wildcards can be used in the filename. The address is assumed to be in decimal form; if the address is in hexadecimal form, prefix it with a "$" sign.

For example, the command:

LOAD 1:PGM.XYZ,1234 (RETURN)

loads a program named "PGM.XYZ" into memory starting at decimal address 1234. Alternatively, this command:

LOAD 1:PGM.XYZ,$2000 (RETURN)

loads the same program into hexadecimal address 2000.

WARNING

Do not load a program into the memory area between addresses $6000 and $7FFF, or you will damage the DOS Executive.

AUTOMATICALLY STARTING A PROGRAM

When you load the DOS Executive into the Miniterm, it starts running automatically. This is referred to as "boostrapping", or just "booting", the system. Because booting happens automatically, you do not normally need to worry about it. However, you can reboot the system at any time by giving it a boot command. This is simply:

BOOT (RETURN)

Note: Boot is a transient command. The DOS diskette must be in drive Ø before you type this command.

The boot operation normally loads and starts the first program on the diskette in drive Ø. You can however change this: by using a link command, you can tell the system to boot some other program on the diskette other than the first one. This other program must be a binary file with a transfer address (file type Ø1); it may be the DOS Executive, which for some reason is in a location other than first; or it may be another program. Once you give the system a link command, it remains in effect until you change it by using another link command.

Note: Link is a transient command. The DOS diskette must be in drive Ø before you type this command.

The format of a link command is:

LINK (RETURN)

The Executive responds by asking "ENTER SYSTEM FILE?". Answer by typing the filename, for example:

CDIDOS.SYS (RETURN)

The Executive identifies this file on the disk, and records it as the file to be booted in future. No wildcards may be used in the filename.

JUMPING INTO A PROGRAM

When you have loaded a program into memory along with the Executive, you can jump into it at any address by using a jump command. The system will then run under the control of the second program.

In giving a jump command, you must specify the address to jump to. The format of a jump command is:

JUMP_(address) (RETURN)

The address is assumed to be in decimal form; if the address is in hexadecimal form, prefix it with a "$" sign.

For example, the command:

JUMP 256 (RETURN)

tells the system to jump to decimal address 256. Alternatively, the command:

JUMP $E113 (RETURN)

tells the system to jump to hexadecimal address E113.

Note that if the specified address contains a subroutine return (RTS) instruction, the command aborts, and control immediately returns to the Executive.

SECTION 8

BEFORE YOU CALL FOR SERVICE . . .

INTRODUCTION

Computer Devices, Inc., provides service and operation assistance by telephone. If you are having problems in using your Miniterm, and you suspect that there is a fault in it, call your nearest CDI customer service representative for help.

However, before you call for help, there is usually something you can do to verify that there really is a problem. After all, we all make mistakes from time to time!

In the procedures below, look in the left column for the problem you are experiencing; then look in the right column for one or more procedures to try before you call for help.

YOUR PROBLEM ...	... POSSIBLE CORRECTIVE PROCEDURES
OVERALL OPERATIONAL PROBLEMS	
When I turn on the Power switch, nothing happens.	• Make sure the power cord is securely plugged in at both ends. • See if the fuse has blown. (Unplug the Miniterm before removing the fuse to check it.)
When I press the START/STOP key, nothing happens.	• Make sure the Line switch is in the Local position. • Make sure the Memory/Tape Write/Edit/Read switch is in the Edit position.
When I try to transfer control from Editor to BASIC Interpreter, I get the message "CAN'T DO".	• Check the size of the program in the workspace. If there is a large BASIC program in the Editor workspace, it may inhibit the transfer of the BASIC Interpreter. To make enough memory space for the Interpreter, you must file this program into a memory, tape, or disk file. • Make sure the text in the Editor workspace is in BASIC format, and is compatible with the Interpreter. The most common problems are: - the lines are not numbered; - a line is more than 80 characters long; or - the text includes control characters.

YOUR PROBLEM ...	... POSSIBLE CORRECTIVE PROCEDURES
PRINTER PROBLEMS	
The Miniterm will not print anything.	• Make sure the Printer switch is in the On position. • Make sure the Format switch is in the ASCII position. • Make sure the Mode switch is in the Alt position. • Check that power is reaching the Miniterm: if there is no power, the lights that illuminate the printer paper are not lit. (See the previous problem for details.) • Make sure the printer paper is loaded correctly: perhaps it is not threaded behind the black rod at the rear of the paper well.
The printer is skipping dots; or the overall print is too light.	• Make sure the printer has been loaded with the right type of paper: you must use CDI thermal paper type B. • Clean the printhead. • Turn up the Print Density control.

YOUR PROBLEM ...	... POSSIBLE CORRECTIVE PROCEDURES
TAPE PROBLEMS	
When I try to read a file from tape in the Editor mode, I get an ERROR ØØ2, "FILE NOT FOUND".	• Make sure you put the right minicassette in the tape-drive by printing a directory of the tape. • Make sure you put the minicassette in the tape-drive on the correct side by printing a directory of the tape. • Rewind the tape by typing G and pressing the RETURN key; then try to read the file again. • Make sure you typed the filename correctly.
When I try to read a file from tape in the Editor mode, I get an ERROR ØØ1, "HARD READ ERROR".	• Clean the head and try again. If this does not help, try to read another tape: - If other tapes work, then the first tape is faulty: discard it. - If no tapes work, the tape-drive is faulty: call CDI for service.
When I try to read a program from tape in the BASIC Interpreter mode, I get an "IO ERROR ON FILE Ø ...".	• Rewind the tape and try to load the program again.*
When I try to write a program to tape in the BASIC Interpreter mode, I get an "IO ERROR ON FILE Ø ...".	• Make sure there is a minicassette in the tape-drive. • Make sure the minicassette is not write-protected. • Make sure you typed the filename correctly.

**Before calling CDI for assistance with a problem involving a BASIC program, consult your company's Product Support Specialist who wrote the program.*

YOUR PROBLEM ...	... POSSIBLE CORRECTIVE PROCEDURES
BAR-CODE READER PROBLEMS	
When I turn on the power to the Miniterm, I get a message "READER ERROR".	• Make sure the wand is securely plugged in. • If the wand was connected after the Miniterm was powered up, press the MASTER RESET button under the top cover of the Miniterm.
I cannot read labels with the wand.	• Check the operation of the wand by running the test program shown in Section 6. • Make sure the BASIC program that controls the wand is written correctly*. • Verify that the labels you are trying to read are in Code 39, rather than some other bar code. • Make sure the labels you are trying to read are printed clearly: for example, you cannot read labels that have been photocopied.

**Before calling CDI for assistance with a problem involving a BASIC program, consult your company's Product Support Specialist who wrote the program.*

YOUR PROBLEM ...	... POSSIBLE CORRECTIVE PROCEDURES
80/132-COLUMN PRINTER/PLOTTER PROBLEMS	
I cannot change the printing format from the keyboard.	• Make sure the format selection switch is set to the CODE SELECT position. • Make sure you are not using the Editor: when the Miniterm is in the Editor mode, you cannot control the format from the keyboard.
The printer is not printing in the 80-column format.	• If you are using the Editor, set the format selection switch to the 80-COLUMN position. • If you are using the KSR/ASR mode, either set the format selection switch to the 80-COLUMN position, or set the format switch to the CODE SELECT position and type the command ESC+CTRL+A followed by RETURN. • If you are using the BASIC Interpreter, either set the format selection switch to the 80-COLUMN position, or set the format switch to the CODE SELECT position and enter the program instruction: PRINT "ESC CTRL A" (RETURN)
The printer is not printing in the 132-column format.	• If you are using the Editor, set the format selection switch to the 132-COLUMN position. • If you are using the KSR/ASR mode, either set the format selection switch to the 132-COLUMN position, or set the format switch to the CODE SELECT position and type the command ESC+CTRL+B followed by RETURN. • If you are using the BASIC Interpreter, either set the format selection switch to the 80-COLUMN position, or set the format switch to the CODE SELECT position and enter the program instruction: PRINT "ESC CTRL B" (RETURN)

YOUR PROBLEM ...	... POSSIBLE CORRECTIVE PROCEDURES
The printer/plotter will not plot when directed to by the program.	• Make sure your Miniterm is equipped with the optional printer/plotter. (Check for the presence of a code select switch under the top cover, as described in Section 6.) • Make sure the BASIC program that controls the plotter is written correctly*. • Make sure the program includes the SETPLOT command.
DISK OPERATING SYSTEM PROBLEMS	
I have powered-up the Miniterm, but when I press the START/STOP key the DOS Executive does not load and run.	• Make sure the disk-drive cables are securely plugged in at both ends. • Make sure the selector switches on the backs of the disk-drives are set appropriately. • Make sure the system disk is in drive Ø. • Make sure the system disk is oriented correctly in the drive.

**Before calling CDI for assistance with a problem involving a BASIC program, consult your company's Product Support Specialist who wrote the program.*

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